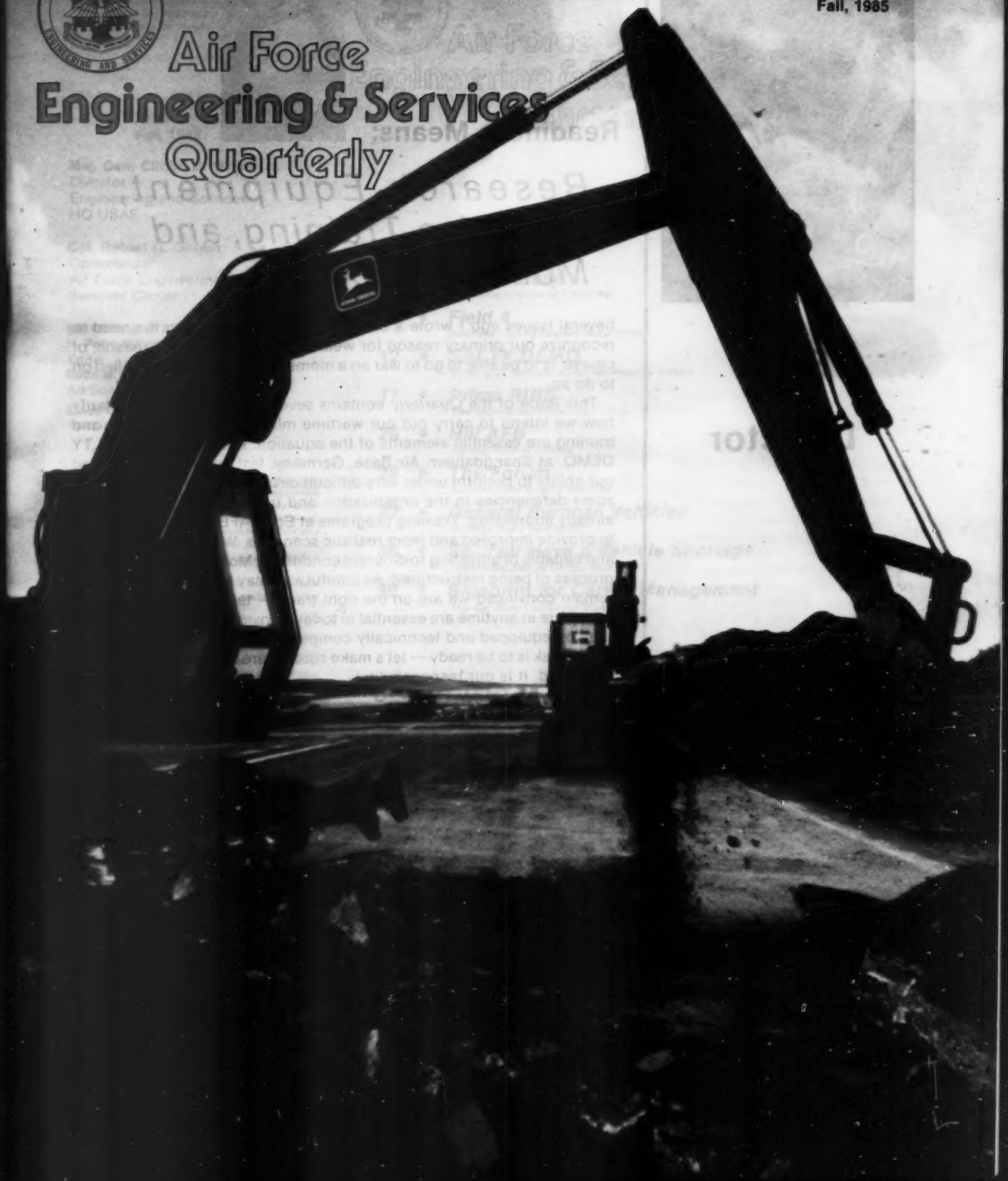
AFRP 85-1
Vol. 26, No. 3
Fall, 1985

Air Force Engineering & Services Quarterly



From the Director

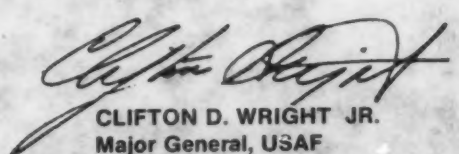
Readiness Means:

Research, Equipment, Facilities, Training, and Motivated People

Several issues ago I wrote a short article that focused on the need to recognize our primary reason for wearing the uniform. That reason, of course, is to be able to go to war on a moment's notice if we are called on to do so.

This issue of the *Quarterly* contains several articles that help clarify how we intend to carry out our wartime mission. Force structure and training are essential elements of the equation. Participation in SALTY DEMO, at Spangdahlem Air Base, Germany, last spring demonstrated our ability to perform under very difficult circumstances and confirmed some deficiencies in the organization and training areas that we were already addressing. Training programs at Eglin AFB are being adjusted to provide improved and more realistic scenarios. We need to be flexible and capable of adjusting to different conditions. Mobility teams are in the process of being restructured. As painful as it may be to make changes, I remain convinced we are on the right track — teams that can perform anywhere at anytime are essential in today's environment. Not only must they be equipped and technically competent, they must be well led.

Our task is to be ready — let's make sure we are equipped, trained, and motivated. It is our responsibility!



CLIFTON D. WRIGHT JR.
Major General, USAF
Director, Engineering and Services

FRONT COVER: Readiness is our reason for being. A RRR excavator at SALTY DEMO. (Photo by Del Reeve)

AFRP 85-1
Fall, 1985

Air Force Engineering & Services Quarterly

Maj. Gen. Clifton D. Wright Jr.
Director
Engineering and Services
HQ USAF

Col. Robert G. Gilbert
Commander
Air Force Engineering &
Services Center

EDITORIAL STAFF
H. Perry Sullivan Jr.
Editor
Dean M. Spencer
Art Editor
Linda Colvin
Special Assistant

The **Air Force Engineering and Services Quarterly** is an official, non-directive publication of Headquarters United States Air Force, published quarterly under provisions of Chapter 12, AFR 5-1. Its purposes are to

- Attract highly qualified personnel to the Air Force Civil Engineering and Services career fields.
- Promote effective training, education, and retention.
- Communicate vital concepts, policies, and practices which affect the wartime readiness of the United States Air Force.
- Promote professionalism and devotion to duty.
- Stimulate planning for the wartime survival of our personnel, weapons systems, and facilities.
- Develop Air Force stewardship of the well-being, quality of life, and facilities support to Air Force personnel and their families throughout the world.
- Promote awareness of the efficient, effective, and essential facilities needs of the Air Force.
- Transfer knowledge of Air Force Engineering and Services technical and scientific achievements.
- Promulgate teamwork among the Air Force Engineering and Services' total force.
- Achieve a professional dialogue to enhance the thought, development, and contributions of the Engineering and Services team worldwide.

The **Quarterly** editorial offices are at HQ Air Force Engineering and Services Center, Tyndall AFB, Fla. Contributions, suggestions, and criticism are welcome. Opinions expressed do not necessarily reflect the official viewpoint of the Department of the Air Force, the Director of Engineering and Services, or the editorial staff. Authority to publish this periodical automatically expires in January 1986 unless its continuance is authorized by the approving authority prior to that date. The use of a name of any specific commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

DISTRIBUTION F: The QUARTERLY is free to Air Force Engineering and Services organizations, based on one copy for each five members of a unit's total force. Unit commanders establish organizational requirements through the local Publications Distribution Office, using the Air Force Form 764a. Air Force Civil Engineering and Services personnel and elements not assigned to host E&S organizations may receive the QUARTERLY free by providing a statement of need to accompany the AF 764a. Those not eligible for free distribution may purchase subscriptions or individual copies from the Superintendent of Documents, Government Printing Office, Washington DC 20402.

FEATURES

4 • ***A War Story***
A Canadian's Vision of a Dirty War

8 • ***Field 4***
Readiness Training Upgrade Means BRAAT

12 • ***SALTY DEMO***
Building an Alternate Launch and Recovery Surface

17 • ***Prime RIBS***
New Mobility Team Structure

26 • ***Hill AFB***
Turning Trash to Treasure

28 • ***The Forum***
Facilities Panel Is Part of the POM

32 • ***General Purpose Vehicles***
Do BCEs Really Need More?

36 • ***So, You Have a Vehicle Shortage***
The Monkey May Be on Your Back

39 • ***Blueprint for Career Management***
You Can Make Your Career Work

DEPARTMENTS

18 • Current Emphasis
24 • ESQ World
25 • ESCCMP Promotions and Reassignments
31 • CESMETtips
38 • Tecnotes

CALL OR WRITE: The Editor, HQ AFESC/DEJ, Tyndall AFB, FL 32403, AUTOVON 970-6467

A War Story

This article appeared first in *Ubique*, the semi-annual periodical of the engineers of the Canadian armed forces. The author, Thumperhead, is a pseudonym. The term is a nickname accorded by other members of the Canadian forces to the engineers.

by 'Thumperhead'

It was a dark and stormy night...war was expected at anytime. The Canadian air bases in Europe were scenes of frantic activity, the press of concurrent demands forcing normally rational people into acts borne of desperation and divinity. There was a lot of confusion.

The boss of the Airfield Damage Repair organization was in the Wing Operations Centre (WOC). He'd been there a lot recently. Sitting for a change, he visually roamed the plastic-covered sheet of bristol board that carried the names, the ranks, and the trades of everyone he knew he could call in if something happened (and you, the reader, know it will). Sniping at his sense of well-being were the many blank spaces on the chart.

Two and one half years of planning and discussing ADR flyover, multilateral support, and the like, flashed past. Too late to worry, he thought. And anyway, with the 100 or so people I do have, the new equipment, a bit of luck, and a display by the troops just a little better than that on the last TACEVAL and we'll have our act together.

Later...

The attack came very early in the morning. The Canadian airfield took — in NATO parlance — an average beating. There were big holes in the main runway and in the taxiway. One hangar was burning brightly. Several areas — Have you ever noticed how all airfields tend to be flat? — had been littered with dozens of nasty anti-personnel munition (the newer ones, which have a habit of going after the person, or the machine, trying to get rid of them).

A number of the new super bombs had burrowed into the concrete, but failed to explode. And there were a bunch of surface scratches — scabs, the planners call them. Ever notice how the planners always look at things backwards, or upside down?

And there were three extras — the things that appear at the end of the plan under the heading 'Other.' First, a good news — bad news story. The LLAD guys had done well; they had brought down a bad guy. But that plane was now burning and cooking off ammunition at dead centre of one of the main runway intersections. Second, the wind had died to next to nothing. So the smoke from all the fires was being only softly stirred and was spreading into a very opaque blanket. This made eyeball assessment very much a guestimate beyond a couple of hundred feet. Finally, not a single friendly aircraft had bought it. Most, though, weren't going to go very far for a while. Three combat-ready birds were prisoners in their own

shelters, peering out at jammed doors and carpets of mixed FOD and bomblets. Many of the remainder just didn't have any safe surfaces to taxi on. Worst of all, main power to the control tower was suspect because in one of the craters which one thought would be a problem, two ragged ends of the main conduit could be seen where there should not have been any end!

The minute the sirens had sounded, and the bigger AD barrels and tubes had coughed into action, the ADR duty team broke all records getting to their equipment compound. By the time they arrived, the attack was over, the hangar, two down, was on fire, and the enemy jet had become a spectacular, but increasingly, rounded shape. And the incredibly loud noise of the short battle had quieted to an orchestra of random explosions of anti-personnel cluster bombs, the more frequent crunch of something aboard the downed enemy jet, the crackle of a good fire, and a background of screams and hollering.

Before a single wheel of the ADR equipment had turned, six minutes had elapsed since the *All Clear*.

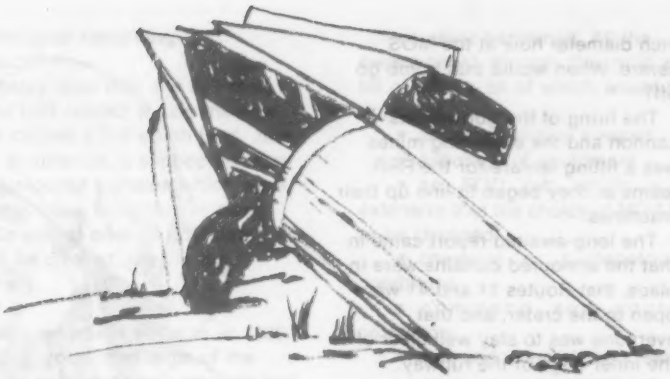
The WOC-ers were really into information collection and order-giving. The ADR boss was no exception, being swept along the adrenalin-pumping environment in the womb of the airfield. More members of the ADR unit appeared...

16 minutes...

The EOD Chief was at the door. "The burning plane, the smoke, the cluster bomb hiccups, and the dark are to make this exercise interesting," he said, in the manner reserved by field engineers for understatements. He set out for his gunwagon with a camera, a telescope, a rifle that looked very much like a private item, and three very obviously unenthusiastic young soldiers, two of whom were already in bomb suits and having trouble walking, turning, and making it through door frames.

"Have you got the guys up on a hangar roof to do their Mkll eyeball trick?" someone asked.

Another, into the radio, "What do you mean, all the lights are out?"

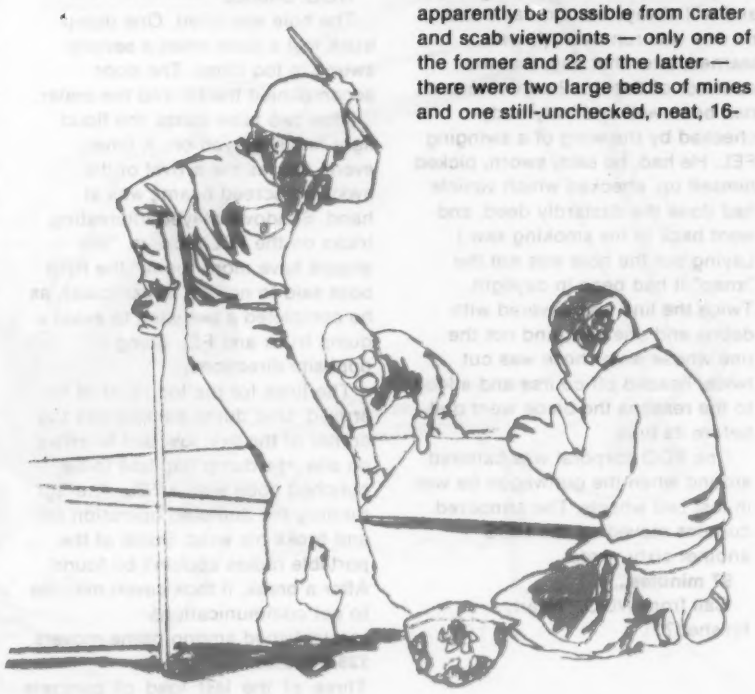


"You gotta take the floods! J.C., why haven't we got that done yet?" from a third.

Reports from perimeter security forces, the EOD and recce teams, and the 'eyeballs' — one of whom was perched on the new cherry-picker, were assembled and sorted. Demands from the WOC were acknowledged and — all the time realizing nothing was being physically accomplished — it was decided to use plan 13 for a Minimum Operating Strip (MOS). Without further delay, the EOD teams deployed, and tractor drivers hooked up to the armoured curtains.

The dumps were loaded with gravel and the FELs, UNIMOGs, forklifts, screed beams, and concrete saws were unlimbered. The weekly maintenance days were paying off — everything started and connected. The RRR boss hollered long and loud for the return of his tractors, which he needed to haul his low beds, each creaking under 12 two-meter square slabs.

EOD was slow...too slow. The ADR boss in the WOC had known the lack of night training would cost, so he wasn't nearly as excited as everyone else. Many seemed balanced on an edge barely more stable than controlled hysteria. And the first reports were not good. Although the MOS choice would apparently be possible from crater and scab viewpoints — only one of the former and 22 of the latter — there were two large beds of mines and one still-unchecked, neat, 16-



inch diameter hole at the MOS centre. When would that bomb go off?

The firing of the gunwagons' cannon and the exploding mines was a fitting fanfare for the RRR teams as they began to line up their machines.

The long-awaited report came in that the armoured curtains were in place, that Routes 11 and 41 were open to the crater, and that everyone was to stay well clear of the inner edge of the runway.

The RRR train, after a Monaco-like start, disappeared into the light-striped darkness and smoke. At 62 minutes, a FEL fell victim to a minelet which destroyed the hydraulics and left a smooth bump in the armoured floor. The driver, his ears ringing, his right arm numb, and the sweat pouring down the creases of his NBC suit, stumbled out of the vehicle and joined a passing tractor trailer. The armoured bulldozer pushed the dead FEL onto the verge.

Another round of cannon fire and mine explosions.

There was not a bit of spare room around the crater. Men on the ground, three FELs, sweepers, and dump trucks vied for space. It was, and will always be, a miracle that no one was run over. (It was learned, later that day, that the operator of the No. 2 concrete saw had been well and truly body-checked by the wing of a swinging FEL. He had, he said, sworn, picked himself up, checked which vehicle had done the dastardly deed, and went back to his smoking saw.) Laying out the hole was not the "snap" it had been in daylight. Twice the line was covered with debris and one saw, and not the one whose water hose was cut twice, headed off course and added to the reasons the blade went dull before its time.

One EOD corporal was battered around when the gunwagon he was in lost two wheels. The armoured curtains moved up the MOS another sixty yards.

97 minutes...

Call from WOC. "Nearly finished?"

Answer. "No."

Another call from the WOC. "Could you change the MOC to the one for plan f (garbled)...?"

Answer: "Say again."

WOC: Silence

The hole was filled. One dump truck lost a door when a second swung in too close. The door accompanied the fill into the crater.

After two false starts, the flood light finally stayed on. A timely event, too, as the arrival of the awkward screed beams was at hand. Shadows played interesting tricks on the FEL jockeys. "We should have more room," the RRR boss said to no one in particular, as he completed a two-step to avoid a dump truck and FEL going in opposite directions.

The fines for the top layer of fill arrived. One dump backed into the corner of the first low bed to arrive on site. His dump flap had to be punched open with a FEL. The Sgt. running the dumping operation fell and broke his wrist. Some of the portable radios couldn't be found. After a break, it took seven minutes to get communications reestablished among prime movers.

136 minutes...

Three of the last load of concrete slabs were laid on the first crater. Every man was by now certain he could offer at least one improvement to the procedures. And every man knew that, without their long hours of collective training on real and serviceable equipment, much more would have gone wrong.

Varoom — Klang: Armoured curtain two shuddered, tottered, and heeled over. The tunnel bomb lifted the pavement under the skid and sent suitcase-size pieces of concrete flying through the air. There were two casualties, both on the scab teams, but no evidence of gas, so masks were still in the pouches. A small, but important mercy.

WOC: "You're shooting at the main hangar."

Answer, "No, we aren't" (they may have been, but none of the rounds wound up going through the building).

The enemy jet softly burned out and disappeared.

The clean and fill teams deployed to the second crater as soon as the armoured curtain had been stood up — a procedure no one had thought to practise — and

repositioned.

The sky lightened. Floods were taken away. Two more saw blades were connected. The hose set of one saw was so well wrapped, with more than 100 feet of gun tape at four places, that it hardly leaked at all.

Word arrived of a new priority of repair of the Essential Services. The ADR boss crawled out of a borrowed jeep just as the last panels were dropping into the first crater. The decision was taken to forgo the sand to brace the blocks so that all the dump trucks could concentrate on crater number two.

The EOD group finished clearing the MOS and were quickly deployed to one of the armament compounds where another garden of bomblets blocked all but a narrow track to the racks. A wheel was chewed off gunwagon two, probably because the driver missed an unmarked turn and took a short cut across uncleared grass.

Two of the tractors departed to gather the mobile arrestor gear. One was badly smoking, with only second gear remaining.

Later...

(probably later than the 240 mark)

The first aircraft to use the new MOS carried a full bomb load. Just prior to rotation, it slipped between two armoured curtains which were going to have to remain in place until a pair of piles of bomblets could be cleared, later in the morning.

Later...

A second attack came in at 1700 that day, soon after most of the damage to surface and services had been repaired.

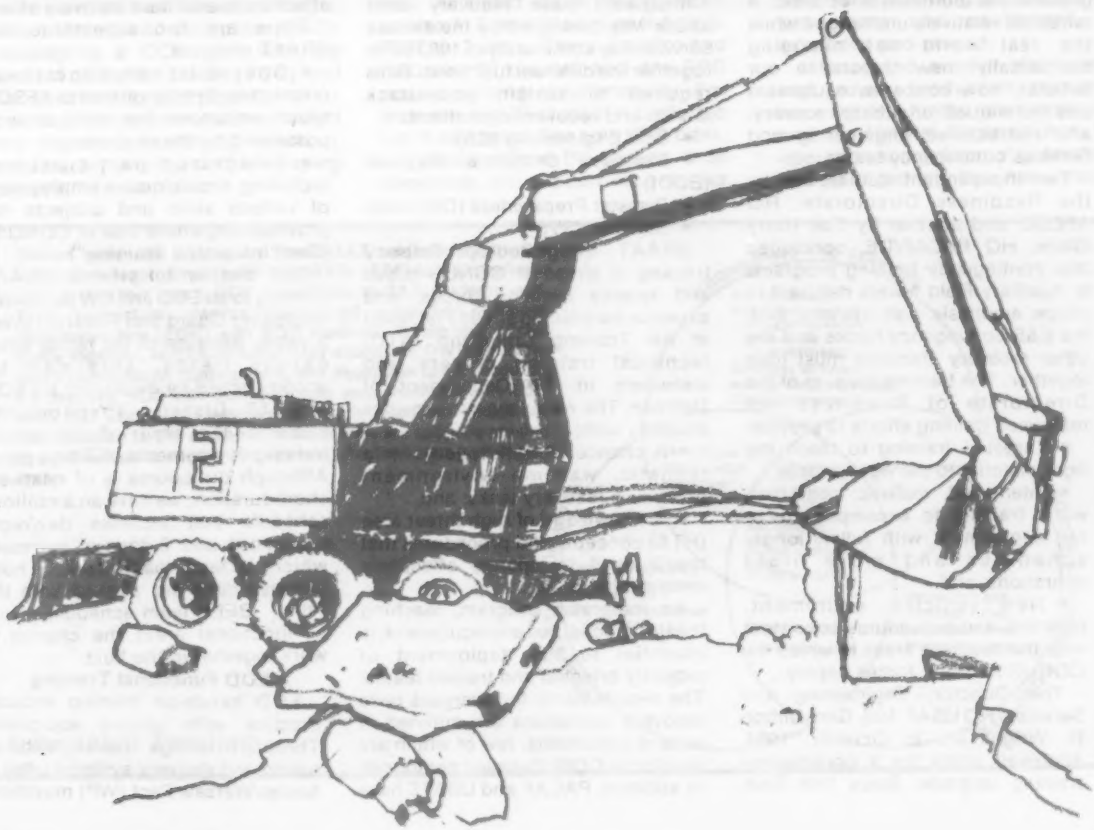
The ADR reinforcements had not arrived.

Someone decided to repair the same MOS chosen after the first attack. An unlucky decision; the first EOD gunwagon met a big mine and flipped over on its side. The three men in the crew were deaf for four days. At almost the same time, it was learned that one of the arrestor gear trailers had been destroyed by a direct hit on the reel.

This never happened. All the events could, though. So could a lot of others, all of which would be unhappy.

- an attack during a repair
- sabotage of equipment
- an EOD job which is so extensive that the choice of MOS has to be changed.
- chemical or bacteriological conditions
- command and control confusion
- new and unpracticed crews

The only hope for reasonable confidence in ADR, and for airfield engineer support in general, is sufficient, serviceable equipment, operated by skilled teams, using rehearsed procedures, under the direction of good leaders, with the best of communications.



Readiness Training Upgrade

FIELD 4

The author acknowledges the contributions of Capt. Sebastian P. Castorina, CMSgt. Fred McLeod, and MSgt. Henry Bowman. The article is based on presentations by the author and the contributors before a readiness training Program Review Committee (PRC) meeting held June 27 at the AFESC training site at Eglin AFB, Fla. The PRC was established to review and facilitate needed changes in readiness training for E&S and other airbase recovery forces.

by Maj. Michael E.J. Whitty

Background

Engineering and Services contingency training began at Auxiliary Field 4, Eglin AFB, Fla., in 1979 with 18 personnel, meager facilities, and a limited program. Since that time, the instructors, the site infrastructure, and the mission have grown. Instructors and support staff strength soon will climb to nearly 90. Even with growth, the curriculum at Field 4 remained relatively unchanged while the real world was changing dramatically: new threats to our airfields; new concepts, equipment and techniques for airbase recovery; and restructured Engineering and Services contingency teams.

Two independent studies, one by the Readiness Directorate, HQ AFESC, and another by Col. Harry Glaze, HQ PACAF/DE, concluded that contingency training programs at Auxiliary Field 4 were deficient in scope, emphasis, and intensity; and, the E&S contingency forces and the other recovery elements must train together. The training division of the Directorate of Readiness has refocused training efforts to provide:

- Targeted training to teach the right material to the right people;
- Intensified, realistic, near real-world training to accomplish more per deployment with fuller, longer schedules and more night operations; and,
- New vehicles, equipment, facilities, and procedures consistent with the overseas areas to which the CONUS recovery forces deploy.

The Director, Engineering and Services, HQ USAF, Maj. Gen. Clifton D. Wright Jr., in October, 1984, approved plans for a contingency training upgrade. Since that time, vehicles, equipment, personnel, and facilities requirements were identified and upgrade action was initiated. Phase I of the formal curriculum revision was accomplished last May. In late June, a special contingency training Program Review Committee (PRC), established to provide oversight, confirmed that: the required training upgrade and program changes were properly focused; the E&S community should provide continued support; and, upgrade implementation should be in October of this year. Since starting the training upgrade, intense efforts have been directed towards acquiring proper resources to accomplish the training program.

Contingency training at Auxiliary Field 4 now includes: Base Recovery After Attack (BRAAT); Prime BEEF; and, Prime RIBS.

BRAAT

Integrated base recovery after attack was developed by the airbase survivability community in 1983 to tie together the different functional skills required to sustain post-attack launch and recovery operations:

- Civil Engineering (CE);
- Explosive Ordnance Disposal (EOD);
- Disaster Preparedess (DW); and,
- Services (SVS).

BRAAT integrated proficiency training is aimed at CONUS active and reserve mobility forces, and expands the training already received at Air Training Command (ATC) technical training centers and elsewhere in the Department of Defense. The new program provides students with:

- A chance to work together in a realistic, wartime environment practicing recovery tasks; and,
- A knowledge of high threat area (HTA) concepts and procedures that they'll need to operate effectively once deployed.

An integrated program, teaching theater procedures and equipment, is essential to the deployment of properly oriented and trained teams. The requirements for overseas base recovery operations are outlined in several documents, few of which are familiar to CONUS-based personnel. In addition, PACAF and USAFE have their own requirements, unique to each theater, which are learned only when you PCS overseas. Lack of orientation and dissimilar backgrounds have caused our recovery personnel significant problems. Differing technical terms required explanation, and slowed decision making, impairing overall effectiveness.

Particularly needed is hands-on training with theater-type facilities and equipment. (See "Equipment") BRAAT engineering students will work in the survival recovery center/damage control center (SRC/DCC), operate heavy equipment, and practice concrete slab and fiberglass repair procedures; EOD students will operate the ORACLE (ordnance, rapid area clearing) system, and practice with the standoff munitions disrupter (SMUD); DW students will practice chemical control area (CCA) procedures in the survivable collective protection system (SCPS-2), work in the SRC, and operate the advanced liquid agent detection (ALAD) when fielded.

Training together gives them an idea of what the other teams do during recovery operations; how the different skills interact, and how they affect the overall base recovery effort.

There are two aspects to the BRAAT program:

- Specialist or functional orientation directly related to AFSC's which enhances the skills already possessed by the student.
- Integrated participation, including simultaneous employment of various skills and subjects not provided anywhere else in CONUS. (See "Integrated Training")

Our aim is to provide BRAAT training to all EOD and DW personnel (including Guard and Reserve) every 3 years. Because of the rather small career fields, this can be accomplished by deploying six EOD and 10 Disaster Preparedness students for each of 38 annual training deployments of 7 days each. Although the course is of relatively short duration, we have an ambitious schedule that includes day/night operations and 2 days of exercises which extend past dark. These exercise days are aligned with the Prime BEEF team schedule giving all functional areas the chance to work together in the field.

EOD Functional Training

EOD hands-on training includes practice with unique equipment. Threat briefings cover different fusing and delivery systems used on Soviet/Warsaw Pact (WP) munitions.

Prime Beef Program Review

Deployment Schedule

Shift	Sun	Mon	Tue	Wed	Thu	Fri	Sat
A [HE & C³]	1	2	3	4	[5]	6	
B [HE & C³]		1	2	3	4	[5]	6
C [RRR]	1	2	3	4	[5]	[6]	7

Students also learn: how EOD considerations affect the concepts and procedures for MOS selection; and, render-safe procedures (RSP) for booby traps and improvised explosive devices (IED) generated by WP behind-the-lines disruption forces.

During the exercise, EOD students participate in damage assessment team operations (DAT OPS) using the ORACLE to clear submunitions, performing RSP on inert Soviet/WP munitions, removing UXO, and practicing pre-exercise instructions.

DW Functional Training

Procedures learned include: when and when not to deploy decon teams; special EOR training covering recognizing, marking, and reporting munitions; identifying chemical ordnance; learning concepts and mechanics of camouflage, concealment, and deception (CCD); developing a CCD plan with the tactical deception officer (TDO); and hands-on equipment practice.

Attack protective measures taught are dispersal, hardening, blackout, pre-attack planning, and developing passive defense plans.

NBC cell operations training includes plotting, predicting, and reporting contamination; assessing NBC hazards, and estimating their duration.

DW collective protection training teaches in-processing, SCPS system operations, monitoring and adjusting pressurization and power, the filter/blower system, and the procedures for quick and safe filter changes.

Prime BEEF

The Prime BEEF training program now consists of three major courses: Rapid Runway Repair, Harvest Eagle, and Command, Control, and Communications.

To train over 500 different specialty teams, the schedule of 38 training periods per year will continue. We also extended each Prime BEEF course, H.E. and C³ courses to 6 days, RRR to 7 days. There are also two H.E. and C³ courses and one RRR course running simultaneously. For instance, two 90-student H.E. classes run 1 day apart. The sole RRR class, composed of three PB-4 teams, or 36 personnel, will support each during separate exercises, providing each team with a realistic airfield recovery scenario, and giving every RRR class two full exercise periods.

- *Rapid Runway Repair* now includes detailed hands-on instruction in all three approved methods of repair — AM-2, FRP (fiberglass reinforced polyurethane), and ARRRT (concrete slab).

RRR students will be using an extensive variety of both basic and supplemental RRR equipment. (See "Vehicles") Instead of using Florida sand for crater repairs, crushed stone materials very similar to that found in USAFE and PACAF will be used. Also, students will receive hands-on training with the high-speed concrete cutting saw, the screed beam (essential to ARRRT), and the anchoring procedures used with AM-2 and FRP.

Multicrater repair exercises will test on-scene leadership to effectively use available resources. Each RRR class participates in two major daytime events and a limited nighttime event. Newly constructed concrete training pads will be used in lieu of the old methods of using exploded craters.

- *Harvest Eagle* includes: electrical, mechanical, water treatment, plumbing, structures, and pavements and equipment, all expanded and revised.

Interior and exterior electricians, and power production personnel learn lighting for the new temper tent and the Harvest Eagle kitchen, the operation and upkeep of generators, airfield lighting, the new mobile

Shown within the circles are the BRAAT subjects taught. DW instructors teach Emergency Action File (EAF) to DW students; E&S instructors teach DCC operations to E&S students; and, EOD instructors practice specialized explosive ordnance reconnaissance (EOR) with EOD students. Where two circles come together, strict functional lines disappear. DW instructors teach camouflage, concealment, and deception to CE students; CE teaches MOS selection concepts and procedures to EOD students; and, EOD instructors teach chemical munitions identification to DW students. In the middle are subjects needed by all students to survive and operate effectively in a high-threat area.

Integrated Training

VEHICLES

- **Replace outdated vehicle fleet**
- **Revise vehicle table of allowance**
- **Accelerate delivery of new vehicles from Southwest Asia stocks (24 units, including a 10-ton tractor, 10 dump trucks, four CUCVs, vibratory roller, a grader, and more)**
- **Reprogramming for missing items (excavators, rollers)**

aircraft barrier system and the BAK-12 expeditionary arresting system.

The mechanical specialty, taught to refrigeration and heating personnel, covers tent and immersion heaters, H.E. walk-in refrigeration units, the lightweight decontamination system (Sonator), and the KMU-450 power unit used with the SCPS-2.

Water treatment training, now doubled to 24 hours, teaches both the reverse osmosis water purification unit and the erdlater.

Plumbers get instruction on the metric system (essential during foreign deployment), field shower, laundry unit and erdlator, expedient and field sanitation, and the new H.E. kitchen plumbing system.

• *H.E. Structures* — Carpenters, masons, and sheet metal personnel learn how to erect the hardback temper tent. Easier to construct than the general purpose tent, it can be expanded, and the cover makes it much cooler inside. The class includes a 1-hour block covering the various uses of the T-square, one of our most popular subjects.

Pavements and equipment personnel included in PB-2 and PB-3 teams will be integrated into the PB-4 team (RRR) operation most of the time. Heavy equipment hands-on orientation includes ample exposure to repair techniques for large craters and spalls, using ARRRT methods, polymer concrete and crushed-stone, and learning splinter protection.

• *Command, Control, and Communications* is extracted from the H.E. package, and is now a separate course centered around the new, fully functional SRC/DCC facility, equipped with all items normally found at a European airbase. (See "Facilities") The class receives a large variety of computer-simulated damage problems, exercising building priorities, available resource listings, and detailed utility tabs essential to base recovery.

Students also learn force beddown, damage assessment and minimum operating strip (MOS) selection.

Exercises include using night vision goggles (NVG) in minimum light conditions under EOD direction. Inputs on airfield damage will be intermingled with computer-simulated base-proper damage reports. C^3 teams must set priorities and manage limited resources.

Prime RIBS

For the first time since 1979, when an Air Force program of mobile Services teams was approved, Prime RIBS (Readiness in Base Services) is integrated into the BRAAT concept. Billeting expertise is used in allocating space in the SCPS-2. Other significant additions include explosive ordnance reconnaissance (EOR); and nuclear, biological and chemical (NBC) agent orientation. Services contingency courses cover:

• *Management*, directed to selected Services officers and NCOs, offering an overview of field environment operations.

• *Basic* skills enhancement for 611X0 personnel.

• *Food Service*, for personnel holding skill levels 3 and 5, extended from 5 to 7 days to offer more hands-on training.

Field laundry operation, billeting, wartime mortuary affairs, tactical exchange field operation, food preparation, and equipment operations and maintenance will continue to be taught.

Significant improvements include the new Harvest Eagle kitchen. It provides all students with a pleasant, air-conditioned dining facility to enhance training site productivity. Food service production and RIBS training will be improved with a better field oven, no-stick tilt grills, and a

EQUIPMENT

- **Harvest Eagle tents, generators**
- **EOD — Munition mockups, nightvision goggles, remote explosives detonators, and safe handling devices**
- **Disaster Preparedness — Camouflage netting, decoys and damage moulage; chemical detection; SCPS-2 shelter system**
- **C^3 — Computer for Survival Control Center/Damage Control Center (SRC/DCC)**
- **RRR — Screed beams, concrete saws**
- **RIBS — Harvest Eagle kitchen, mobile kitchen trailer (MKT)**

FACILITIES

- **Immediate**
  - **New RRR pads, EOD and DW building, and classroom contracted by the base**
  - **Training cadre projects augmented with Reserve forces**
  - **New 1,500-foot SRC/DCC facility**
  - **Beddown of Harvest Eagle kitchen**
- **Longterm**
  - **100-vehicle maintenance complex**
  - **Garage with offices, fueling facility, wash rack, and parking**
  - **Renovate latrine**
  - **Extend cadre buildings**
  - **Renovate administration buildings**
  - **Repave roads**
  - **Construct vehicle parking area**
  - **Install security fence**
  - **Damage assessment and expedient repair facility**
  - **RIBS cadre facility**

three-compartment sink. The mobile kitchen trailer (MKT) will be delivered soon for home-station training. Students will learn its use supporting flightline training of the BEEF students.

These changes will reinforce the interdependency of all players in the BRAAT environment.

Conclusion

We are confident that the new program represents a giant step forward for readiness training. We look at our newly implemented BRAAT training as the RED FLAG for recovery forces. We have revitalized the Prime BEEF and RIBS programs.

To teach our mobility forces the war skills they need to know, we have added a separated C^3 program, more hands-on training, supported by modernized equipment and an improved facility.

Our new program will soon lose effectiveness if the mechanism for change is not built in. We strongly indorse the concept of an annual readiness training PRC to crystalize program directions and priorities. Our new training division will be capable of coordinating contingency training throughout the world, including home station, PACAF, and USAFE, to assure that the Eglin program properly equips students to perform their missions, and adapt to changing contingency requirements as they occur.

The goal of our program is to provide our deploying forces with the knowledge they need to operate in wartime. Our objective is far more than to survive. It is to win.★

ORGANIZATION

- **Redesignate Field 4 as a detachment**
  - **O-4 site commander**
  - **Move BRAAT officer authorizations from Tyndall to Eglin**
  - **Program EOD officer for mid-1986**
  - **Request O-3 CE officer**
  - **Realign cadre into special teams**
- **Create training division**
  - **Request O-5 as chief**
  - **Form training coordination and curriculum development function at HQ AFESC**

Maj. Michael E.J. Whitty, PE, a Canadian Military Engineering Exchange Officer, is Training Division chief for the Readiness Directorate, HQ AFESC. He received most of his military training at the Canadian Forces School of Military Engineering in British Columbia, and has attended Canadian Land Forces Staff Course in Kingston, Ontario. His varied background includes assignments to CF Air Command HQ, in Winnipeg, Manitoba, a Combat Engineering Regiment in Velcartier, Quebec, and tours at both the base and headquarters levels with Canadian Forces Europe, in Pohr, Germany.

Building an alternate landing/recovery site can be done; even in the

Muck 'n Mire

Maj. David J. Ruschmann

Background

After an initial attack on a U.S. Air Force overseas base, the wing commander must launch retaliatory attacks before the enemy returns with a second-wave attack. Vulnerability of the aircraft on the ground has been reduced by hardened aircraft shelters; however, the prime operating surfaces, the runways and taxiways, have now become important targets. Bomb damage to these operating surfaces would temporarily ground aircraft until they could be recovered.

The presence of additional (redundant) operating surfaces presents a much greater targeting problem for the enemy. Forcing the enemy to spread an attack over a larger area may limit damage to the main operating surfaces and reduce the time needed to repair those surfaces. More important, if these additional operating surfaces are sited away from predicted areas of damage, then launch and recovery of aircraft can be made on the alternate surfaces while the main operating surfaces are being repaired.

Construction using conventional pavement systems and siting criteria as alternate launch and recovery surfaces (ALRS) would be costly. Also, the surfaces would be overdesigned in terms of traffic capacity. Unless used for training, an ALRS would only be required to sustain 100 aircraft operations versus 300,000 plus operations for standard pavement designs. ALRS siting must consider susceptibility to collateral damage from attacks on main operational surfaces; the minimum length and width required for specific mission aircraft; as well as other geometric criteria, such as slopes and clearances.

Geometric criteria, developed by HQ AFESC, Tyndall AFB, Fla., were based upon:

• Aircraft manufacturer's performance criteria;
• Interviews with aircrews;
• Observed landing, approach, and takeoff data; and,
• Aircraft operating manuals.

The criteria compared risk (operational safety) and cost (both of the facility and the aircraft). A length of 7,500 feet and a minimum width of 60 feet with two 4-foot wide shoulders were recommended with an increase to a 75-foot width, if space is available. These criteria support wartime operations, but require some changes for peacetime training standards for landing length exceeding ALRS lengths.

Design Concepts

Test surface design evaluation was scheduled during SALTY DEMO. SALTY DEMO is the name given to the Air Force's first integrated airbase survivability capability demonstration which analyzed overall base recovery after attack. SALTY DEMO brought together civil engineering, operations, medical, EOD, base defense, transportation, supply, communications, services, and other key organizations for recovering a typical USAFE base's mission after a first strike, tactical attack. SALTY DEMO also demonstrated key R&D rapid runway repair systems and techniques which are being fielded or proposed for use. A major factor in the AFESC design was to incorporate updated geometric and redundant surface siting criteria. The design considered several exercise and training goals:

• Allow peacetime training and exercise operations
• Provide a test bed for a "generic" test section
• Allow for aircraft operations over proposed interim techniques for bomb damage-repaired (BDR) craters.

Accomplishing these goals called for the construction of three abutting test surfaces. These were the:

• Generic ALRS - A thin, 2-inch asphalt pavement system designed to support 100 fighter aircraft passes.
• BDR section - A rigid pavement with asphalt overlay to typify current USAFE pavements.
• Operational ALRS - A thin, 3-inch asphalt pavement system designed to support 10,000 fighter aircraft passes (except during spring thaw).

The basic "generic" ALRS concept is to provide a design which can be used at most bases in USAFE and Korea to support 100 fighter aircraft operations. The design of the pavement, base course, and subbase course would be: independent of the location; based on locally available aggregrate sources; and constructed on existing subgrade (or on existing on-site materials which have been stabilized). Based on the "generic" design, more lenient vertical control geometric requirements and use of existing materials and stabilization, the cost of an ALRS could be reduced to approximately one-third of that for a standard 300,000-pass pavement system.

Design

Design of an 8,100-by-70-foot ALRS with two supporting taxiways was finished in March, 1984. The initial design was based on a subgrade soil with 3.5 CBR. During construction, the subgrade would be mechanically stabilized to a minimum of 6 CBR. The designs for the ALRS generic and operational section were based on a reduced subgrade strength design (i.e., strength is lost during spring thaw conditions). The 0/32 mm base and 0/63 mm subbase course materials would be well-graded and non-frost-susceptible. The 2-inch asphaltic concrete would be of high stability (+1,800 pounds) and low flow (16 or lower) based on the 75-blow Marshall method. Bulk materials were procured through the Germany Staatsbauamt (STBA) procurement agency at Trier.

The final design was different for the generic and operational ALRS sections. Changes in material and design occurred during the initial procurement and construction and to allow work to continue under very wet spring and fall conditions. The generic design became a 5 percent lime-stabilized subgrade with 13 inches of well-graded, non-frost-susceptible 0/32 mm crushed stone. The operational section became a working platform of a geotextile fabric with 8-plus inches of 35/63 mm aggregate (small ballast stone), 11 inches of subbase, and 6 inches of crushed stone base. The working platform was used because efforts to mechanically stabilize the subgrade soil could not be achieved and remain on schedule.

Manning

The major construction agent was the 819 CESHR (RED HORSE) from RAF Wethersfield, United Kingdom. Work began in March, 1984, with the demolition of existing structures: an engine test stand, an abandoned underground ammunition storage bunker, numerous manholes and drainage lines, and a fire-training pit. The crucial relocation of communications, meteorological, NAVAIDS, and security cables and equipment was accomplished by the Electronic Installation Division, Air Force Communications Command, Tinker AFB, Okla., and two of the division's groups, the 485 EIG, Griffiss AFB, N.Y., and the 1836 EIG, Lindsey AS, Germany. Upon completion of the relocation, RED HORSE was free to begin stripping of soil, cut and fill operations, and drainage construction.

The initial 30-man RED HORSE team was expanded by early July to 40 personnel, plus 12 TDY equipment operators, and remained at this strength until mid-August when 70

personnel were working two full shifts. An overall manning shortage in site developers (553X0), especially those with pavements/soils lab experience, was an early critical quality control (QC) concern during construction. Through manning support from stateside Air Force Logistics Command bases, additional site developers were sent to Spangdahlem AB in mid-July. The Army Waterways Experiment Station (WES) provided two personnel to HQ AFESC, who performed quality assurance (QA) along with a permanent HQ AFESC project officer. On Oct. 16, the 7002nd CEF from Ramstein AB, was added to the construction effort. The 7002nd concentrated their efforts on the 1,100-foot generic section, while RED HORSE finished working the 5,000-foot operational and 2,000-foot BDR sections. The 7002nd, after paving the asphalt porous friction course on Spangdahlem's main runway, performed all asphalt paving on the ALRS.

Equipment

Just as changes were made in materials and manning, changes were also made in the use of equipment. The initial design was based on planned availability of aggregate spreaders, heavy compaction equipment, and a 50-ton proofroller. By July, after 4 months of seeking equipment, a 50-ton proofroller was still unavailable. A smaller 30-ton proofroller was flown to Spangdahlem AB from HQ AFESC at Tyndall AFB. An aggregate spreader was also needed to place materials which segregate during hauling. In July, it was determined that an aggregate spreader would be unavailable. To prevent segregation during placement of subbase materials, the 0/63 mm material was changed to a 22/63 mm material which could be placed without an aggregate spreader.

Stabilization and Weather Problems

Meanwhile, a more serious problem had already developed. With construction underway, the *in situ* clay soil was at a 21 percent moisture content and less than 3 CBR. Mechanical stabilization by rototilling (to 13 percent moisture content) and compaction by sheepsfoot roller was not working as planned. None of the rollers were heavy enough to perform adequately. During May and early June, 6.1 inches of rain (twice the normal rainfall) fell on the site and changed many area of the ALRS into 6 inches of muck with an underlying CBR of 1. An effort to remove the soil, dry it out, and restabilize with 3 percent lime in the top 6 inches of soil was undertaken. Again, compaction equipment was inadequate. Several self-propelled vibratory rollers with pads were rented and stabilization improved. With progress being made again, 40 days of rain (7.4 inches and 2.6 times the normal rainfall) fell from September to early October. Because of this rainfall and its effect on the work schedule, the only way to catch up was to bring in more equipment and personnel and to change the design of the pavement system cross section. The 7002 CEF was added to the construction force. To allow work to continue, a 12-inch thick, 5 percent lime-stabilized subgrade was used under the generic section, while, under the operational section, at least 8 inches of mud was mucked off and replaced with the aggregate working platform.

Winter Construction

Due to the previous problems, construction could not be completed during the normal construction season. However, as the ALRS test surface was critical in conducting SALTY DEMO, construction of the ALRS had to be pushed ahead. This meant that a winter construction effort became mandatory and that quality of construction would be very difficult to maintain. The new schedule now became much more dependent on the weather than on construction technique, manning, or equipment.

Personnel of the 7002nd CEF began work in late October and after 6 weeks of intensive work were ready to start paving. They took 2 days to pave the 1,100-foot generic section. They completed paving Dec. 6. Paving of the 70-foot-wide surface was made in eight lanes, using two paving machines, two steel-wheel rollers, and a pneumatic roller. The temperature (air and ground) was 38-40° F with the temperatures of the alphalt 360-380° F at placing and 250-350° F at start of rollings. Densities of this cold weather placement were marginal to poor (average 95.5 percent versus the minimum of 98) and the 2-inch minimum thickness was not met consistently, but varied between 1.31 and 2.56 inches. The AC surface of the generic section was adequate as constructed for R&D testing during SALTY DEMO, but would require maintenance for use as

an ALRS if exposed to several years of weathering.

While the 7002 CEF reworked the generic section, RED HORSE had worked the BDR section. On Oct. 29, RED HORSE began placing PCC with a concrete paver, which broke down after 60 cubic meters (m^3) were placed. RED HORSE then placed the remaining 2600 m^3 using a hand-drawn screed. They completed the PCC work just as the 7002 CEF finished AC work on the generic section. After a week and a half of AC paving, the 7002 CEF finished the BDR section 1 week before Christmas.

After a 2-week work stoppage, when the German plants shut down for the Christmas and New Year holidays, Spangdahlem AB was hit by one of the worst storms of this century. With high temperatures in the teens, lows around 0° F, and 12 inches of snow, placement of subbase and base course materials became very difficult. A warming trend in late January and early February allowed work to proceed for several weeks, only to be shut down for 3 weeks because rock quarries had frozen. When deliveries resumed, the RED HORSE personnel resumed preparations for paving on the remaining 5,000 feet of ALRS.

With temperatures in the upper 30s, the 7002 CEF elected to place the 3-inch asphalt surface in one lift. The concept was to pave the 70-foot width, using seven paving lanes to ensure that the AC lane joints would not fall under the normal main gear paths of the base's mission F-4 aircraft. Again, asphalt temperatures were very hot at placement. After paving 40 percent of the 5,000-foot ALRS, a snowstorm and cold weather struck, delaying further placement for 8 days. The final lanes were finished March 28. The asphalt densities remained low due to cold-weather placement. As on the generic section, the AC surface was generally rough and had poor densities at joints. This surface also was adequate for R&D testing, but would require maintenance to permit long-term service.

Conclusions and Recommendations

QUALITY CONTROL —

• **Conclusion:** The ALRS QC function, handled by site developers during construction, is the key element in managing the construction effort. The QC team must be able to function 24 hours a day as an independent unit. During construction, they establish where work is required, set up boundaries, and measure compliance through surveying. They establish whether or not the existing subgrade soil, the subbase and the base course, the asphaltic concrete (AC) or portland cement concrete (PCC) meet quality requirements for placement.

More importantly, site developers need to be aware of the basis for design and to be able to ascertain whether or not the construction site materials (classification of soil, moisture contents, plasticity index, bearing capacity, and reactivity for stabilization) are consistent with design requirements. They should determine variations in properties. The team should be on-site and fully equipped for laboratory materials testing (soil, aggregate, AC, and PCC) and field testing (nuclear density gauges, plate-bearing test rig, and soil trafficability test equipment), starting with the initial surveying. Regardless of the thoroughness of the predesign materials test program, the testing of materials for the quality control function is the key.

• **Recommendation:** A fully manned, qualified team of site developers must be dedicated to the construction effort. They should be equipped with complete test sets for soil, AC, and (if necessary) PCC per all AFM 89-3 test requirements.

SCHEDULING —

• **Conclusion:** The scope of work encountered during the construction of an ALRS makes scheduling of sufficient personnel and earth-moving equipment critical, especially during critical periods of the construction. Because the average monthly rainfall in Germany is heavier from late spring until late summer, work should be pushed around the clock from the time that the top soil has been removed until the subgrade has been stabilized and protected. This means earth-moving equipment needs to operate from daylight until dark. Rototillers and rollers, as well as site developers working materials testing, often have to schedule work for all 24 hours of the day to maintain pace. Placing required drainage structures should be given a top priority when considering manpower.

• **Recommendation:** When the construction site is exposed to the elements (the period between stripping the topsoil and protecting the subgrade), manning should be at 100 percent to allow around-the-clock construction. Equipment should always be available, with at least one to two spare graders, dozers, and scrapers.

EQUIPMENT AVAILABILITY —

• **Conclusion:** During the European construction season, rental equipment (with or without an operator) is at a premium. If equipment availability cannot be guaranteed by contract prior to the start of the construction season, then the availability of that equipment will be doubtful. The Air Force typically has not been in the horizontal constuction business; the table of allowances does not include some essential equipment. To complete an ALRS construction project during a short European construction season, a RED HORSE team requires additional equipment.

• **Recommendation:** At a minimum, additional equipment should be procured and added to the existing paving equipment.

Equipment	Number	Size
Proofroller	1	50 tons (minimum)
Aggregate spreader	1	0 to 3½ size
Self-propelled tandem pneumatic-tired roller	1	27 tons (minimum)
Steel-wheeled tandem roller	1	12 tons (minimum)
Double-drum towed sheepsfoot roller	2	15-18 tons

STABILIZATION METHOD —

• **Conclusion:** The choice of best subgrade stabilization method requires extensive predesign materials testing and constant materials testing during construction. Although a lower CBR may be required by design, the stabilization method should consider constructibility as a major factor and use a minimum 10 CBR for the subgrade requirement during construction. Changes to the design should be based on test results and not on "common practice." A thorough understanding of the stabilization method should consider that an ALRS pavement system's failure method and criteria are unlike most airfield pavements. Stabilization methodology will be fully explained in a new manual, AFM 88-7, Chapter 4, *Soil Stabilization for Roadways and Airfields,* while actual tests are listed in Chapter 5, AFM 89-3, *Materials Testing.*

• **Recommendation:** The design rationale must be clearly stated for the method of stabilization and followed when planning material purchases and scheduling of personnel and equipment. The rationale should be restated as test criteria and based on common material testing procedures; a planned testing program must be established for all stages of construction.

Maj. David Ruschmann is now assigned to Bitburg AB, Germany, as chief, Operations and Maintenance, for the civil engineering squadron. He previously worked for 4 years in rapid runway repair for the Engineering and Services Laboratory, HQ Air Force Engineering and Services Center. He was ESL's ALRS project engineer for SALTY DEMO. He earned his bachelor's degree in Civil Engineering at the University of Massachusetts, and holds the master's degree in Facility Engineering from the Air Force Institute of Technology. He is a member of the Society of American Military Engineers.

MATERIAL AVAILABILITY —

• **Conclusion:** Due to the variability of European weather, the construction schedule may require variations in material delivery rates if progress is slowed and additional work is required. Delivery rates were often short of requirements when work was at its peak. Dump and spread operations are more efficient, but often less flexible than working with stockpiled materials.

• **Recommendations:** The bulk material delivery contract should allow enough flexibility to increase delivery rates for periods of up to a week. The normal delivery rate should be adequate to supply the site and provide an additional amount to build up a stockpile which can sustain operations for 7-10 days.

Initial Findings from SALTY DEMO

SALTY DEMO was conducted from April 29 to May 17. Extensive AFESC testing of the ALRS was conducted from April 10 to May 23. Some of the initial findings are listed.

a. The generic section was much stronger than design criteria had dictated.

1. While the asphaltic concrete (AC) was of poor density, the asphalt cement content was high enough to prevent cracking.

2. Subgrade stabilization occurred to a greater degree than lab tests had indicated as probable.

3. The generic section could last for up to 5,000 passes before failure due to roughness (2-inch rutting).

b. Joint density was very poor and the AC exhibited surface raveling. A seal coating is needed within 2 years.

c. Additional traffic may cause ponding problems requiring earlier overlay.

d. The generally rough AC surface may require earlier overlay to prevent tailhook skip if F-15 or F-16 aircraft are to use the ALRS or surface roughness problems develop after craters and spalls are repaired on the BDR test surface. ★

New Prime RIBS Mobility Team Structure

by MSgt. Jim Halvorson

We have just implemented the new Prime RIBS mobility concept. This article explains why it's required and outlines program implementation milestones.

Background

The old mobility team structure (4F9RA-4F9RH teams) was not effective for meeting wartime Air Force specialty code (AFSC) requirements. By having both food service (622X0) and services (611X0) AFSCs on the same team, we often send too many of one AFSC to meet the requirements of the other AFSC. An example of this is a collocated operating base (COB) which requires food service support, but does not require field laundry support, due to a host nation agreement. Current mobility team configurations require too many 611X0s. With a large wartime personnel shortfall, we can't afford to deploy anyone not absolutely required.

Another ineffectiveness was the number of military personnel in the CONUS who were not tasked. The MAJCOMs which have full food service contracts, Air Training Command, Air Force Logistics Command, and Air Force Systems Command, have been unable to place their 611X0 personnel on teams because they do not have the proper mix of military 622X0s. Previously, there were over 1,200 CONUS services personnel untasked for either strategic withhold or mobility.

The new team structure solves these problems. First, we will only deploy the AFSCs required at each deployment location. Second, the maximum number of CONUS Services personnel can be postured for mobility.

Reducing the wartime personnel shortfall to the minimum allows us to carry out the vital wartime services functions.

Achieving the Goal

Restructuring has reduced the personnel shortfall by approximately 35 percent. The posturing of the former untasked CONUS services positions reduced the shortfall by 17 percent. Having all services positions coded on unit manning documents, as either *strategic withhold* or *mobility*, offers protection from future civilianization and contracting actions. An additional 18 percent reduction is being accomplished as the major theater operational plans (OPlans) reflect the new teams.

The new team structure consists of six functionally aligned teams designated PR-1 through PR-6.

- ***PR-1*** — Initial food service, supporting 500 personnel at any type base which does not have an existing services organization.
- ***PR-2*** — Primary building block augmentation food service team supporting population increases of 500.
- ***PR-3*** — Food service team used to support 300 personnel at small locations.
- ***PR-4*** — Initial services team used for billeting, field laundry, and mortuary affairs support for 500 personnel.
- ***PR-5*** — Primary building block augmentation services team, for population increases of 500.
- ***PR-6*** — Services supervision, supports population increases of 2,500 at main bases, bare bases or COBs; and augments theater command staffs.

Implementation

In February of this year, the CONUS MAJCOMs determined the types and numbers of teams each base could support. The new team availability has been added to the War Mobilization Plan (WMP), which became effective Oct. 1. The WMP is the primary planning document used by theater planners to build OPlans. Actual reposturing of the bases from the old team structure to the new configuration began in July and was completed in September. AFR 140-3, *Air Force Prime RIBS Program,* has been revised to include functional program guidance changes for management of the new team structure. With more personnel assigned to mobility roles, both formal training (Eglin Prime BEEF/RIBS training required at least once every 36 months) and home station training will increase.

Phasing the new structure into theater Time Phased Force Deployment Lists (TPFDLs) takes approximately 18 months. There will be a period of time when the bases will be postured under the new team concept and the TPFDLs reflect the old team taskings. The MAJCOMs have provided a conversion table which shows 4F9RA - 4F9RH team taskings and their equivalent PR-team capability. We must ensure that all planning actions are updated as soon as possible to reflect the new RIBS mobility structure.★

AFSC	PR-1	PR-2	PR-3	PR-4	PR-5	PR-6
6216						1
6224				1		
6244	1					
62290/00						1
62270	3		1			2
62250	6	3	2			
62230	8	5	3			
61190/00						1
61170				2		
61150				1	1	
61130					2	
70250						1
64550						1
	18	8	6	4	3	7

MSgt. James S. Halvorson is the Services contingency planner, Readiness directorate, HQ Air Force Engineering and Services Center, where he earned the commander's award for excellence last year. He previously taught food services courses at Lowry Technical Training Center.

Directorate of Engineering and Services

Current Emphasis

READINESS

War Readiness Spares Kit (WRSK) Status — RED HORSE relies on the Air Force supply network to ensure parts support during contingencies. War Readiness Spares Kits (WRSKs) are established to accomplish this. RED HORSE squadrons have reviewed the WRSK general guidelines. WRSK procedures will be published by HQ TAC/LGSWG in the near future to supplement AFM 67-1 and establish responsibilities for in-garrison and deployment/exercise procedures. (HQ AFESC/DEOP, TSgt. Trevillian, AUTOVON 970-6131)

Contingency Training in PACAF — A contingency training site has been established at Kunsan AB, Korea, for PACAF-based Prime BEEF/RIBS teams. Both active duty and Air National Guard teams receive instructions in base recovery activities. Initial training in rapid runway repair methods, beddown procedures, construction of aircraft revetments, and the installation of airfield lighting kits are covered in the 5-day course. Plans are to expand the program to 2 weeks in order to include survival recovery center exercises, damage assessment techniques, and heavy equipment operations. (HQ PACOPS/DEO, Capt. Reddington, AUTOVON 449-9793)

Mobile Aircraft Arresting System (BAK-12) — The Air Force will soon have the ability to arrest fighter aircraft on any minimum operating strip in a bombed-out runway or on a remote bare base runway within minutes after arriving on location with the new BAK-12. Once installed, this unit can arrest a different fighter aircraft every 3 to 4 minutes. To get this capability, the Air Force has a contract with Gulf & Western for 16 BAK-12s, complete with spare parts, to be received by December, with the option to buy up to 135 additional systems. The BAK-12 can be installed on concrete, asphalt, or dirt surfaces by an experienced crew using self-contained equipment in a matter of minutes. (HQ AFESC/DEOP, Mr. Smith, AUTOVON 970-6128)

First Tactical Air Command Prime Beef Workshop was held Mar. 11-14 at Tyndall AFB, Fla. Prime BEEF officers and NCOs from 18 TAC main bases attended. Items discussed included UNITREP, new technology, team chief involvement, continuity and employment books, Prime BEEF Day, IG procedures, personnel readiness folders, weapons/munitions, and security. Overall emphasis was on "training as we will fight." Particularly productive were the independent officer and NCO sessions and the crossfeed of Prime BEEF information between bases. The critiques indicated much enthusiasm and many action items were carried back to HQ TAC. (HQ TAC/DED, SMSgt Boxx, AUTOVON 432-7657)

Reverse Osmosis Water Purification Units (ROWPU) are supplanting erdlators for purification of drinking water under field or emergency conditions in all four services. The Army and Marine Corps are replacing all of their erdlators with ROWPUs. The Air Force (TAC and MAC) has begun to use ROWPUs in Harvest Bare and Volant Tent sets. Harvest Eagle and Housekeeping sets will retain erdlators for the time being. ROWPUs can remove salt and heavy chemical pollution that erdlators cannot handle. The Air Force currently owns 56 ROWPUs, most of which are stored with the Harvest Bare equipment at Holloman AFB, N.M. They have proven their effectiveness in exercises such as GALLANT EAGLE and BRIGHT STAR, and in support of several real-world contingencies. Most AF water/waste specialists are not yet familiar with ROWPU, requiring special training at Eglin before each exercise involving ROWPUs. While ROWPUs still have a few bugs to be worked out, the machines are fully functional and ready to go to war today. (HQ USAF/LEEX, Lt. Col. McNickle, AUTOVON 225-7744, HQ AFESC/DEO, Capt. Woosley, AUTOVON 970-6738.).

Fire Protection Postattack Requirement/Capability Assessment — To assist fire department personnel in their firefighting role, HQ AFESC is conducting a study to identify and apply priorities to all fire protection conditions/situations resulting from an attack and during the ensuing 12-hour period. Impact on postattack recovery will be evaluated. The study also includes a review of preplanned recovery actions, correction deficiency, and recommendations to optimize mobility and use of assets. (HQ AFESC/RDCF, Mr. Walker, AUTOVON 970-6256)

LOGISTICS

WESCOP — A joint HQ PACAF/AFLC initiative to improve logistics support to western Pacific bases is in the final stages of implementation, to overcome excessive order and shipping time. Obtaining locally purchased materials, not available in overseas markets, is causing serious support problems in PACAF. Civil engineering work orders at several PACAF bases are routinely delayed up to 5 months, awaiting supplies. HQ PACAF Logistics, Engineering and Services, and Comptroller explored alternatives. They determined that establishment of a west coast purchasing function, collocated with AFLC's container consolidation point (CCP) at McClellan AFB, Calif., would resolve many of these support problems. A memorandum of agreement (MOA) is being staffed; manpower, communication, administration, contracting, and transportation issues are being finalized with a planned implementation date this month. The test base will be Clark AB, Philippines. If successful, action will be taken to phase implementation of WESCOP support to eight other western Pacific bases. (HQ PACAF/DEMG, CMSgt. Roach, AUTOVON 449-5051)

OPERATIONS AND MAINTENANCE

A Central Heating System Tune-up Program is being developed to improve the operating efficiencies of central heating systems (CHSs). Overall objectives are:

- Improving the operational and efficiencies of CHSs,
- Providing technical support to base CHS personnel, and
- Compiling data on Air Force CHSs.

Included in the program are identifying and correcting maladjusted controls, worn linkages, leaking seals on boiler fire boxes, excessive blowdown rates, and leaking steam traps. We also want to identify and fund high-payback system alterations. We expect that operational efficiency improvements of from 10 to 20 percent can be realized, based on similar projects.

Implementing the program will be through regional seminars for base personnel who are directly involved in operation and maintenance of CHSs, with supplemental provision of published checklists, procedures, and methods. Meetings with the MAJCOMs will introduce the program and solicit their comments. The CHS tune-up program is being funded under the Air Force E&S Investigational Engineering Program. It will be developed by the Army Construction Engineering Research Laboratory under a project order from HQ AFESC. (HQ AFESC/DEMM, Mr. McDonald, AUTOVON 970-6352)

ENERGY

The "Hangar Heating and Energy Conservation Manual," DEB-TR-84-01, was distributed by HQ USAF/LEE last December to all MAJCOM/DEs for further dissemination to base personnel. Review the report and take advantage of its 30 different easy-to-implement ways to conserve hangar energy. You'll save energy and money. (HQ AFESC/DEB, Mr. Hathaway, AUTOVON 970-6462)

UTILITIES

Air Force Power Conditioning and Continuation Interfacing Equipment (PCCIE) policy has been established to:

- Require each BCE to provide "typical utility power," as defined by ANSI C84.1, to all on-base users.
- Require acquisition of each item of equipment (such as automated data processing equipment (ADPE), communications electronics (CE), or similar electronic devices needing a higher quality of "clean" electrical power) to include acquisition of integral or adjacent PCCIE in the same appropriation/budget activity in order to provide the lowest life cycle costs for use of both the electronic devices and the PCCIE. (HQ USAF/LEEEU, Mr. Conkling, AUTOVON 297-4082/6237)

More on Prewiring of Buildings to Support Information Systems/Services — New Air Force policy directs that all administration areas of new facilities and major renovations include prewiring in the design and construction process. Prewiring provides the necessary information services of: voice, data, facsimile, video, support for energy monitoring and control, alarms, sensors, etc. Further examples of such provisions include: telephone wiring/cabling (including distribution frames, but excluding cross-connect wiring), modular telephone jacks/outlets, and coaxial/fiber optic cable systems (i.e., cable, taps, splitters, outlets, amplifiers). Cabling includes all necessary support to cable from the nearest point of the base cable transmission plant to the primary distribution frame within the building. However, this policy does not include end instruments and equipment (such as telephones, workstations, data terminals, or switchboards). (HQ USAF/LEEEU, Mr. Worden, AUTOVON 297-4082)

HOUSING

AFR 90-1 has been revised in its entirety. It consolidates seven publications (AFRs 30-15, 90-1, 90-2, 90-3, 90-6, 90-10, and 91-1) into one directive. Besides revising and updating all the publications used by housing management personnel in their day-to-day activities, it implemented many changes on housing assignment policies. It should be in PDO channels by now. (HQ USAF/LEEHO, Mr. Cortes, AUTOVON 227-0157)

CONSTRUCTION

Third-party Financing on Air Force Projects — Congress has directed the military to determine if the private sector can deliver certain services more economically and efficiently than the Government. All requirements for heat and power plant projects involving large British-Thermal-Unit loads must be thoroughly investigated prior to inclusion in the military construction program (MCP). In addition, the services are conducting test cases involving third-party financing for the construction, operation, and maintenance of child care centers. No additional child care center projects in the MCP are being considered by Congress until this effort is accomplished. The Air Force has also initiated its own effort involving a combination VOQ and conference center at Wright-Patterson and Bolling AFBs. (HQ USAF/LEEES, Ms. Simpson, AUTOVON 297-4250)

LAUNDRY AND DRY CLEANING

Automated Pricing and Listing System (APALS) for customer articles is part of the ongoing modernization program for the Air Force industrially-funded, government-owned/government-operated (GOGO) laundry and dry cleaning plants. It was recently purchased from NCR Corporation. APALS is a network of NCR 2160 point-of-sale terminals linked to a 256K memory processor. The system increases efficiency and productivity and enables the extraction and printing of periodic financial and management reports generated from the detail data input at the work area terminals. APALS is already in use at several Air Force laundry and dry cleaning plants and is fully operational, worldwide. (HQ AFESC/DEHR, Mr. Peacock, AUTOVON 970-6179)

IMAGE WINDOW

Functional Review Workshops:

- Structural — Conducted April 2-12, it covered carpenter, plumbing, metal, and mason shops. Developed by the workshop were 39 recommendations, including:
  - Combining masonry and carpentry;
  - Combining plumbing and water and waste;
  - Establishing an Air Force specialty for general maintenance mechanic;
  - Developing an allocation program for base civil engineering work orders; and,
  - Reducing backflow prevention testing and overhaul.

Results were forwarded to MAJCOMs June 21 for review and comments.

- Sanitation — Conducted May 20-23, the workshop covered sanitation and entomology. Among the 31 recommendations were:
  - Aligning plumbing, water and waste, and the BCE's entomology functions under an environmental support superintendent;

- Transferring water, sanitary sewage, and industrial waste systems to the water and waste function;
- Providing manning for hazardous waste programs; and,
- Incorporating basic electrical training into an environmental support specialist course.

Results were forwarded July 19 to MAJCOMs for review and comments.

Also attending the workshops were representatives from the Air Force Engineering and Services Management Evaluation Team, the Sheppard Technical Training Center and HQ AFESC. (HQ AFESC/DEMG, CMSgt. Grueter, AUTOVON 970-6400)

Common Thread was the term used when the impact of the functional review workshops on BCE operations was assessed during August at Tyndall AFB. In addition to many of the functional review recommendations, the participants recommended:

- Establishing a HVAC shop;
- Turning over responsibility for O&M plants;
- Aligning controls to the appropriate mechanical function;
- Studying establishment of a CE electronics AFSC;
- Developing an electrical capability in liquid fuels maintenance and in sanitation; and,
- Adding a systems maintenance engineer to operations.

The product will be reviewed by the Sheppard Program Review Committee. (HQ AFESC/DEMG, Maj. Coullahan, AUTOVON 970-6490)

Studies:

- Productivity in BCE operations shops will be studied by Booz, Allen & Hamilton as a continuance to the general purpose vehicle study. Typical BCE workdays will be studied to determine types and causes of nonproductive time. Items with a potential for high payoffs will be identified for future attention. Comparisons will also be made with private sector productivity. (HQ AFESC/DEMG, Maj. Coullahan, AUTOVON 970-6490)
- Performance Management Indicators (PMIs) developed by the Project Image Charter Workshop, CESMET, and others, used in a recent organizational study, will be tested for 1 year at several bases starting this fall. PMIs measure the efficiency and productivity of work centers. After the test, valid PMIs will be published in a pamphlet for optional BCE use. (HQ AFESC/DEMG, Mr. McDaniel, AUTOVON 970-6465)
- Contractors are responding to our invitation for proposals seeking a study of BCE tools, communications, and the workplace environment. The technical evaluation board is evaluating the proposals. Goal of the study is the right mix of human, material, tooling and equipment, facility and vehicle resources for carrying out the BCE peacetime mission, and serving as a foundation to our wartime role. Specific areas of concern are hand and shop tools, communications systems, shop environment enhancements, better warehousing, and materials handling. The successful contractor will visit sample Air Force bases to collect data next year. (HQ AFESC/DEMG/ Maj. Coullahan, AUTOVON 970-6490)

Improved Customer Relations will be the subject of a new videotape program aimed at the BCE worker level. A handbook will be developed for BCEs and middle managers emphasizing customer relations, addressing functional areas. Also, training blocks will be designed for incorporation into the Air Force Institute of Technology and the technical training center programs. The goal of each effort is improving the BCE image by enabling us to make and keep commitments to our customers. (HQ AFESC/DEMG, Ms. Ponshock, AUTOVON 970-6394)

CAREER CORNER

Correction: USAF Pays for Civilian Registration Training — Our statement in the summer, 1984, *Quarterly* that the Air Force will pay the examination fee is in error. The examination is not training and, thus, cannot be funded from training funds. However, the Air Force encourages professional registration of engineers and architects and considers registration part of the professional employees' career development. Your CCPO may be able to assist by providing training funds for refresher courses. To assist the CCPO in budgeting for requirements, notify them well in advance of your need for refresher training. (HQ USAF/LEEES, Mr. Arnegard, AUTOVON 297-4261)

Housing Interns Selected — Barbara Ann Kelly and Walter Wood were selected as the first housing management interns. Their 3-year internship will consist of working in military family housing management at three different bases and two different major command headquarters. Kelly will train at Tyndall, Scott and Randolph AFBs. Wood will train at Vandenberg, Offutt, and Langley AFBs. Both were selected from a group of 97 qualified applicants who applied for the program. (HQ USAF/LEEHO, Mr. Makara, AUTOVON 227-0157)

Update on the Conversion of Cryogenics Responsibilities from AFSC 545XO to AFSC 631XO — Two actions are being taken:

- A letter from HQ USAF/LEYSF through HQ USAF/MPPT to all MAJCOMs concerned, instructs them to convert their manpower positions to AFSC 631XO as 545XO personnel rotate to a new assignment starting in January, 1986, to be completed in FY 89.
- A second letter from HQ AFMPC will be addressed to personnel having the 037 SEI, giving each an opportunity to convert to AFSC 631XO or stay in their present AFSC. Career NCOs in AFSC 545XO, having an assignment with a school date between now and October, will remain committed to that assignment. No career NCOs in AFSC 545XO will be selected for a cryogenics assignment after Oct. 15, unless they are volunteers for AFSC 631XO. After August 15, all pipeline students attending the cryogenics school started coming from AFSC 631XO. (HQ AFESC/DEMG, SMSgt. Pinson, AUTOVON 970-6397)

The Master of Engineering Applications (MEA) Program has been offered by Air Force Institute of Technology (AFIT) for many years to Engineers and Architects; however, only a few have found it possible to complete the course. Changes in the course structure now make it easier to participate. AFIT plans annually to admit a maximum of 20 students beginning in FY 86. If you hold a bachelor's degree in engineering, architecture, or the physical sciences, and desire to obtain a master's degree, contact your Employee Development Specialist (EDS) in the central civilian personnel office (CCPO) and/or your Civil Engineer Training Officer for more information.

Recording Training History in Personnel Data System — Training of any length, completed while employed by the Air Force during the immediate past 5 years, should be coded. Training more than 5 years old may be entered if it was 40 hours or more in length, or part of a formal written training plan, and is applicable to your current position or to a position to which you can reasonably be expected to progress. Mandatory training that is required by higher authority, regardless of length, will be entered and stored. Training received outside the Air Force should be coded if it is applicable to your present or possible future positions. The Employee Development Specialist, in conjunction with the staffing function in your CCPO, is responsible for these determinations. They follow the guidance in OCPO/MPK letter, Aug. 12, 1982, Personnel Data System-Civilian (PDS-C) Training History Coding Guidance; and OCPO/MPK message 032002, Aug., 84. While these established guidelines should be followed as closely as possible, some flexibility must remain to serve the best interests of the Air Force and the employee. Good judgment is the key.

Nominating Procedures for Office of Civilian Personnel Operations (OCPO) Centrally Funded Training Programs — require that nomination packages by ESCCMP registrants, be forwarded through MAJCOMS rather than directly to OCPO. MAJCOM Executive Management Development Panels will review the nomination packages, provide command endorsement, and rank both career and noncareer nominations prior to forwarding the packages to OCPO. This will include all programs which require selection by an Air Force selection panel — such as for professional military education, which will be rated and ranked by the ESCCMP Training and Development Panel prior to being forwarded for consideration by the Air Force Panel.

Investigate Before You Sign Up — Too many times a registrant's name surfaces for referral to a location, or is referred and selected; and then, and only then, the registrant considers personal implications of a permanent change of station (PCS) to that location. Considerations may rise to the surface, including cost of living, moving mobile homes, relocation and reemployment of a spouse, and availability of special education for children. Some of these answers should be determined before you sign up for locations rather than just before or after selection. You are planning your (and your family's) future. Consider wisely and in advance.

Engineering and Services Civilian Career Management Program (ESCCMP) Career Guide — The new career guide is being distributed to all registrants. A copy will be mailed to each new registrant by the career team at Randolph AFB as their registration is recorded in the Personnel Data System-Civilian (PDS-C). The guide should not only be used for personal information by each registrant, but as a tool by supervisors to explain the Engineering and Service Career Program to new employees — whether or not they are currently eligible to register in the programs. (OCPO/MPKCE, Mr. Hogan, AUTOVON 487-6388)

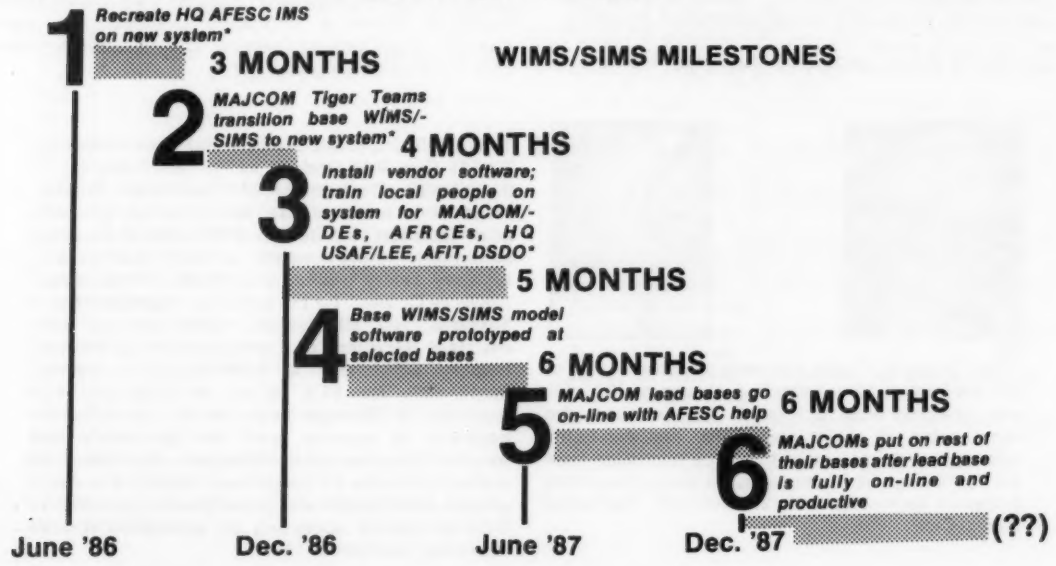
TRAINING

Inspector General's Functional Management Inspection on Service Training indicates that better feedback is needed. There are two primary methods:

- **Direct Correspondence Questionnaire,** sent by Lowry TTC to graduates and supervisors 4 to 6 months after graduation. Graduates surveyed are asked if the training received was adequate to permit performing at the proficiency level specified in the Specialty Training Standard (STS) or Course Training Standard (CTS). Each supervisor is asked to rate the graduate's ability to perform each task at the specified proficiency level. Both the graduate and the supervisor have important contributions to make to ensure the courses provide the quality and level of training needed. The return rate of the questionnaires by graduates of services courses and their supervisors has not been good — less than 50 percent. Services managers must provide feedback to the MAJCOMS and the instructors of services training courses.
- **Training Quality Reports (TQRs)** are used to provide feedback to ATC and the Lowry TTC about whether services courses are providing the supervisor and commander with a quality trained person. A TQR can be submitted by anyone — supervisors, commanders, trainers, or even the graduate. TQRs should be initiated within the first 6 months after the graduate is assigned to a unit. The TQR should be prepared when: course graduates are improperly trained; career development course (CDC) content does not support subject or task knowledge levels in the STS; or the graduate demonstrates severe deficiencies in standards of conduct or discipline during the first 6 months after completing recruit training. Instructions on how to fill out the TQR and where to send it are described in AFR 50-38. Your unit training manager can also provide assistance on when and how to use the TQR. The quality of services technical training is important to everyone. The TQR permits the Lowry TTC instructors to keep courses current and meaningful. (AFISC/IGSE, Maj. Eagan, AUTOVON 876-7023)

COMPUTER CORNER

WIMS/SIMS Acquisition-Validation of vendor proposals was completed by Source Selection Evaluation Board (SSEB) members at the Air Force Computer Acquisition Center Aug. 30. Live test demonstrations (LTD) of competing vendor's hardware and software has started. Contract award is projected for March, 1986. (HQ AFESC/AD, Col. Aldinger, AUTOVON 970-6455)


WIMS/SIMS MILESTONES
1 Recreate HQ AFESC IMS on new system* 3 MONTHS
2 MAJCOM Tiger Teams transition base WIMS/-SIMS to new system* 4 MONTHS
3 Install vendor software; train local people on system for MAJCOM/-DEs, AFRCEs, HQ USAF/LEE, AFIT, DSDO* 5 MONTHS
4 Base WIMS/SIMS model software prototyped at selected bases 6 MONTHS
5 MAJCOM lead bases go on-line with AFESC help 6 MONTHS
6 MAJCOMs put on rest of their bases after lead base is fully on-line and productive (??)
June '86
Dec. '86
June '87
Dec. '87

ESQ world

People, Places & Events of Interest

General Marquez Gets E&S Update

Lt. Gen. Leo Marquez, deputy Chief of Staff, Logistics and Engineering, HQ USAF, journeyed to HQ Air Force Engineering and Services Center, Tyndall AFB, Fla., as part of the "Director's Day" series of program updates and briefings provided by the directorates within HQ USAF/LE.

Maj. Gen. Clifton D. Wright Jr., Director, Engineering and Services, hosted the presentations with Col. Robert G. (Bob) Gilbert, the Center's new commander.

Highlights of the briefings included:

- Progress of the temporary lodging facilities program, funded by the Air Force Welfare Board, being constructed on a time-phased program
- Third-party financing of visitor quarters and conference facilities at selected prototype bases.
- Base housing improvements and some new housing programs
- Success of the firefighting and crash/rescue new technology acquisition program
- Strategy of the 10-year-old Air Force quality design program
- HQ AFESC's IMAGE program (Innovative Management Achieves Greater Effectiveness) and its restructuring of base-level operations and maintenance
- Product improvement and increased maintainability and reliability programs for facility-operating systems, including heating, ventilating, and air conditioning
- The role of the Civil Engineering and Services Management Evaluation Team as an internal consultant for base-level activities
- Environmental impact concerns, particularly the role of comprehensive planning in securing and sustaining military operating areas
- Hazardous waste recovery programs and the status of the Installation Restoration Program
- The status of third-party financing for major energy upgrades and heating plants
- Improved special-purpose vehicles, including the new, rapid-runway-repair excavator and a new, air-transportable drill rig to support contingency operations
- Success of the self-directed Engineering and Services management information system, now approaching Air Force-wide hardware acquisition
- Upgrading the Air Force generating plants, particularly at Thule AB and Lajes AB, under the direction of the Civil Engineering Maintenance, Inspection, and Repair Team (CEMIRT)
- Status of the Air Force-wide operational paving evaluation program, and funding to meet the requirements caused by degradation and wear, and on
- A new, integrated Base Recovery After Attack (BRAAT) training concept at Eglin AFB's Auxiliary Field 4, involving Explosive Ordnance Disposal; Command, Control, and Communications; Disaster Preparedness; and, the Engineering and Services forces. ★

HQ AFESC hats were presented by Col. Gilbert (center) to Gen. Wright (left) and Gen. Marquez.

MSgt. David A. Castro has been selected as one of the Air Force's 12 outstanding Airmen of 1985. He was selected from a total of 87 nominees who represented all major commands and Air Force agencies and was one of the three nominees from Air Force Logistics Command. He is an engineering assistant technician with 2852nd CES, McClellan AFB, Calif.

Tom Lewis Jr., (Col., USAFR), has been named by Florida Gov. Bob Graham as the new Secretary of the Florida Department of Community Affairs, responsible for land use and development, and administration of more than $75 million in housing, community improvements, criminal justice, and highway safety grants. A member of the Design Advisory Council, for the Director, Engineering and Services, HQ USAF/LEE, Lewis formerly was assistant Secretary of Transportation for Florida, helping administer a 9,000-employee agency responsible for $1.4 billion annually. He is a graduate of Georgia Tech, where he holds the bachelor of science, and the bachelor's and master's degrees in Architecture. He served on active duty in the Air Force from 1961-72, and was in private architectural and urban planning practice in Orlando before accepting an appointment from Governor Graham in 1979.

Promotions and Reassignments

Vera Barrett, (Bolling) to GS-1170-9 Realty Officer (Osan) R
John Barrutia, (Mt. Home) to GM-801-13 Ch, Eng & Env Pln (Mt. Home) P
Kimberlee Benart, (Pentagon) to GM-801-13 Dep BCE (Eielson) R
Robert F. Bickett, (Kirtland) to GS-1173-11 Housing Mgr (Lajes) P
Alec Biehl, (Randolph) to GS-301-11 Svs Officer (Tyndall) R
John L. Borodko, (Holloman) to GS-1173-11 Housing Mgr (Luke) P
Hernan Cortes, (Pentagon) to GS-1173-14 Hsg Mgt Spec (Pentagon) P
George G. Cox, (Shaw) to GM-801-13 Ch, Eng & Svs Pln (Shaw) P
Carlton Crenshaw, (Moody) to GS-801-12 Ch, Env & Cont Pln (Moody) P
Garry Dalrymple, (Davis-Monthan) to GM-801-13 Dep BCE (Davis-Monthan) R
Gerald H. Dexter, (Pease) to GS-801-12 Ch, Env & Cont Pln (Pease) P
Richard S. Dillon, (Tinker) to GS-801-13 Ch, Const Mgt (Tinker) P
Arthur J. Ellis, (Mather) to GS-810-12 Ch, Const Mgt (Mather) P
Mark K. Fjeldsted, (Los Angeles) to GM-801-14 Ch, Engs Svs Br (Los Angeles) P
Robert Fornash, (Bolling) to GS-1170-13 Realty Officer (Bolling) P
Alan C. Friedstrom, (Rickenbacker) to GS-801-12 Ch, Env & Cont Pln (Rickenbacker) P
Clara B. Gilmore, (Reinstatement) to GS-1173-10 Billeting Mgr (Travis) P
Leroy C. Gray, (Norton) to GS-801-12 Ch, Tech Design (March) R
Betty Hagen, (Ramstein) to GS-1173-11 Housing Mgr (Fairford) P
Gerald C. Heald, (Travis) to GS-801-12 Ch, Env & Cont Pln (Travis) P
Gloria N. Hill, (Elmendorf) to GS-1173-9 Billeting Mgr (Holloman) P
John P. Hurd, (Richards-Geb.) to GS-801-12 Dep BCE (Richards-Geb.) P
Kathleen Irbine-Bosworth, (Langley) to GS-801-12 Ch, Env & Cont Pln (Langley) P
William Johnson, (Bolling) to GS-1170-13 Realty Officer (Bolling) P
Ralph L. Latta, (Bergstrom) to GS-801-12 EMCS Eng (Bergstrom) P
Albert F. Lowas, (Bolling) to GM-801-14 Dep, Dir Pln & Pro (Ramstein) R
Harry Marien, (Tyndall) to GM-801-15 Ch, Maint Div (Tyndall) P
William McCollam, (Ellsworth) to GS-801-12 Ch, Evn & Cont Pln (Ellsworth) P
Wallace F. McFaul (Dover) to GM-801-13 Dep BCE (Dover) R
Harvey McMahon (Grand Forks) to GM-801-13 Dep BCE (Aviano) R
Robert Nelson (Mt. Home) to GM-801-13 Dep BCE (Mt. Home) R
Paul Parker (Bolling) to GM-810-14 Dep Ch, Pro Req (Pentagon) P
Cassandra Pearson, (Vandenberg) to GS-1170-9 Realty Officer (Vandenberg) P
Susan K. Rice (Andrews) to GS-1170-9/10 Realty Officer (Andrews) P
Robert Rossander, (Langley) to GS-1173-12 Hsg/Spec (HQ USAFE) (Ramstein) R
Thomas C. Russell, (Kadena) to GM-801-13 Dep BCE (Misawa) P
Thomas E. Shoup, (Wright-Pat.) to GM-801-14 Dep BCE (Wright-Pat.) P
Lee W. Stonestreet, (Grissom) to GM-801-13 Ch, Eng & Env Pln (Grissom) P
Drew Titone (Wright-Pat.) to GM-801-13 Ch, Cont Pln (Wright-Pat.) P
Roberto Trevino (Randolph) to GM-830-13 Mech Eng (Kelly-AFCOMS) P
Robert Wahlgren, (McClellan) to GM-801-13 Const Mgt (Vandenberg) P
Glenn Weiblen, (Kelly) to GS-830-13 Supv, Mech Eng (Kelly-AFCOMS) P
William P. Wells, (Tinker) to GS-801-12 Ch, Tech Design (Whiteman) P
Robert C. Woodson, (Yokota) to GS-801-12 Ch, Env & Cont Pln (Beale) R
James A. Wueste, (Bergstrom) to GS-801-12 Ch, Tech Design (Bergstrom) P
Terry A. Yonkers, (Edwards) to GS-819-13 Env Eng (AFRCE-CR) P
Richard Zumbehl, (Grissom) to GM-801-13 Dep BCE (Zweibrucken) R

From Trash to Treasure

by Charles H. (Chuck) West

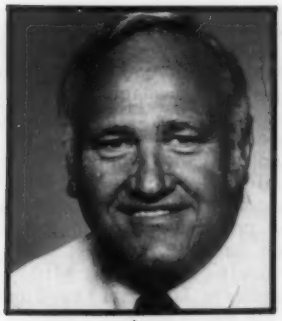
The traditional solid waste disposal processes at most bases are costly, whether using base civil engineering (BCE) forces or commercial contract haulers. Literally tons of computer listing paper, computer data cards, and high-grade, mixed office waste paper go to the landfill. Disposal of these products as trash, collected from the administrative and process activities at Hill AFB, Utah, was costing $25-$50 per ton.

In 1979, Hill initiated a resource, recovery, and recycling (3-R) program, operated by the BCE shops, using appropriated fund equipment, trucks, and manpower. Initially, the operation generated mild interest among base commanders and managers and showed modest profits. Now, the activity involves increasing cooperation and participation at all levels and a potential for six-figure annual profits.

The Hill AFB program presently concentrates on computer paper, computer data cards, and high-grade, mixed paper. It produced $49,000 in FY 83, $86,000 in FY 84, and potentially could produce well over $100,000 in FY 85. Segregation and recycling of used, high-grade hydraulic fluid and synthetic motor oils is being evaluated and could readily add $75,000 to the total annual profit. Additionally, upon arrangement for more storage and work space, the cardboard (boxes and packaging) from industrial process operations will be baled and sold. Presently, the cardboard is hauled off base by commercial contractor at a cost of about $50 per ton. The 780 tons per year costs about $39,000 for disposal, but can be sold for $25 per ton once it is baled, using new equipment to be bought by current profits. Thus, a $39,000 cost can be exchanged for a $19,500 income.

Approximately 180 tons of scrap or broken lumber is generated each month from packing and crating operations, costing $50 per ton for disposal. Although no area-wide market has been located by the Defense Reutilization Marketing Region (formerly Defense Property Disposal Region), a potential buyer offering $25 per ton sale price has been located, and is being evaluated by the base staff. Should this develop, an annual profit of up to $54,000 could be achieved.

Changes in federal law, effective Oct. 1, 1982, help enlist commander interest and motivate base-wide participation and support. Up to 100 percent of the profits above expenses can be devoted to morale, welfare, and recreation (MWR) projects and activities on the generating base. Or up to 50 percent of the profits can pay for pollution abatement, energy conservation, and safety and health activities, with the balance going to MWR projects. The new statute also designated 3-R profits as *no-year* (non-fiscal year identity) funds, allowing complete flexibility to accumulate funds from year to year for large projects, and pay expenses from prior fiscal years. Prior to 1982, the Defense Logistics Agency



Charles H. (Chuck) West, P.E., is the resource recovery and recycling specialist for the Air Force Engineering and Services Center, Tyndall AFB, having moved to the Center in 1978 from the Pentagon. He was a construction management engineer at the Pentagon in the Family Housing directorate from 1975 to 1978. Mr. West served at HQ SAC from 1957 to 1975, after receiving a BS in Civil Engineering from the University of Nebraska in 1949.

Workshop

Gaylene Murdock, HQ AFLC/DEPV, Wright-Patterson AFB, Ohio, 45433-5001, AUTOVON 787-4920, commercial (513) 257-4920, is the command point of contact for 3-R, and for obtaining copies of the OPS Plan. A workshop is scheduled for November, sponsored by HQ AFLC and to be hosted by Hill AFB, and would be an effective training resource for all BCE and NAF managers getting into the program. For further details, readers are encouraged to contact Ms. Murdock.

Hill's Trash Team

- **Col. John Wolfe, Base Commander**
- **Murray O. Sant, 2849th ABG/DEEX, program creator**
- **Leon Ray, BCE Sanitation Foreman — obtained a baler, got office space, kept program moving**
- **Annette Howell, NAF Accounting**
- **Michael Goodsell, NAF Financial Management**

retained about 20 percent of sales profits to cover their expenses. However, the new statute gives 100 percent to the generating base.

In October of 1984, the decision was made in a manpower review to convert Hill AFB BCE trash collection and hauling activities to contract by July, 1985.

By January, 1985, it was evident the BCE manpower had to phase out of the 3-R program. The MWR managers agreed to a trial, using a non-appropriated funds (NAF) supervisor and two full-time workers. The transition was successful, with no interruption of the pickup schedule for recyclables. The production level has experienced steady growth since initiation of NAF participation. The accounting of expenses, proceeds, and all 3-R fiscal activities is now handled by the established NAF financial management office.

Funds from the Hill AFB team effort have been used for:

- An 1800 square foot, pre-cut log cabin lodge for meetings and organizational parties;
- Construction of a 1½ mile jogging track;
- A well at a remote forest recreation campsite;
- Sponsorship of a youth nature conservation camp;
- Purchase of materials for motorcycle shelter sheds;
- Portable toilets;
- A truck for NAF/MWR activities;
- Construction of paths for golf carts;
- Trees for nature development areas;
- Softball fields;
- Laundry building for the FAMCAMP;
- Picnic areas and shelters;
- Water storage tank for a remote recreation site;
- A diesel tractor for nature area trails development and maintenance; and,
- Relocation of horse stables to eliminate off-base environmental pollution.

The BCE and NAF managers at Hill AFB have collaboratively updated the 3-R program, to cover procedures and shared responsibilities of both parties. The document is very complete and could be adapted to fit most base situations.

You, too, can turn trash to treasure at your base. Check with the people who have already been successful selling waste. ★

There's nothing the Air Force does that doesn't require real estate — a platform, utilities, or building of some kind — and to get the funds for that "something" you have to pass review of the facilities panel.

The "forum"

by Arthur B. Markowitz

The development of the Air Force Five-Year Program and annual $100 billion-budget is a classic example of dynamic, participatory management. Far removed from the smoke-filled back rooms of yesteryear, program development takes place in an open forum with the Air Staff and major commands playing interactive roles. The "forum," formally known as the Air Force Board Structure, is comprised of four levels of corporate review, each representing the next higher plateau; i.e., Panel (Colonel), Committee (one star), Air Staff Board (two star), and Air Force Council (three star).

The Air Force Board Structure annually recommends to the Chief of Staff the resources required to implement Air Force programs, the impact of resource shortages, and proposed priorities for resource allocation. Because the Air Force Council and Air Staff Board focus on broad categories, these bodies rely heavily on the four committees and 14 panels to assure that all aspects of an issue have been given proper consideration. Every Engineering and Services program dollar, along with every other dollar that eventually finds its way into the Air Force budget, is reviewed, validated, and approved through this process.

The cycle, which begins in January, when the commands submit their Program Objective Memorandam (POM), continues through mid-September, when the Air Force makes its Budget Estimate Submission (BES) to the Office of the Secretary of Defense (OSD); and closes with a final review of the results of OSD's budget decisions and a determination which, if any, should be appealed as Major Budget Issues (MBI).

Major command POMs are presented to one of the 14 panels, each of which deals with a specific program area. For example, the Strategic Offense Panel is responsible for Strategic Air Command programs; i.e., weapon system acquisition, manpower, operations and maintenance, flying hours, etc. Panel membership is comprised of representatives from the various Air Staff directorates, supplemented by technical advisors when necessary.

With the significant growth in Engineering and Services programs in recent years, the senior leadership of the Air Force recognized the need to incorporate the review of "facility" programs within the Board Structure. This was initiated with the chartering of an *ad hoc* Facilities Select Group (FSG) for review of the FY 85 and FY 86 POMs and resulted in formal panel status in August, 1984. By charter, the Facilities Panel (FP) is chaired by a colonel nominated by the Director of Engineering and Services. It has 18 members from across the Air Staff and is providing a new dimension and depth to Board Structure review of facility programs (MILCON, Family Housing, and Real Property Maintenance Activities) which total about $6 billion per year. The FP is charged with reviewing, assessing, and validating near-term and long-term requirements and issues. FP recommendations include assessment of facilities program timing, executability, Congressional acceptance, risk, alternatives, cost, and design.

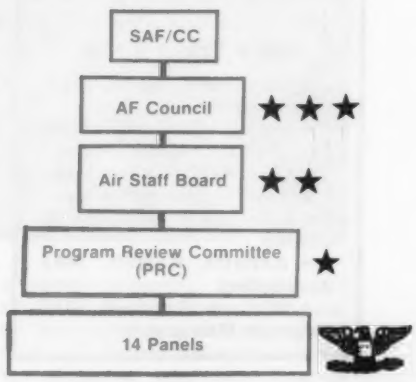
Facilities programs are involved in almost everything the Air Force does. With the FP now being part of the Board Structure, full benefit of its expertise is available to all activities involved in the corporate Air Force review — and its expertise is being used! In the words of the FP chairman, "...the FP is daily becoming a stronger, more cohesive, and professional group due to the high calibre of its members, their knowledge, dedication and objectivity. The FP is a solid member of the Board Structure team..."

Command Engineering and Services and Plans representatives who presented their requirements to the FP have been impressed by the incisiveness and depth of the FP's review. The chairman says "...I tell each command when they appear that they are going to have to field some extremely pointed questions. This is not to embarass them, but to bring out the facts which the FP must have to do its job. If a project passes our ordeal by fire, we support it to the hilt. If it doesn't, there are no secret handshakes to get it by..."

The FP provides the expertise and deep involvement needed by the Board Structure to make key decision recommendations concerning facility programs. For facility project review and validation, the FP is the bridge between commands and the Air Staff.

Because of its tough, no-nonsense approach to requirements review, the panel's judgment is highly regarded within the Board Structure and valid Engineering and Services programs are competing better than ever before. Through panel presentations to the Program Review Committee (PRC) and the Air Staff Board (ASB), managers throughout the Air Staff

AF Board Structure



are becoming more and more conversant with the Engineering and Services business and how we support weapons systems, missions, and people. The previous Facilities Panel chairman frequently told panel members that there's no better place on the Air Staff to learn more about the Air Force than the Facilities Panel. "...There's nothing that the AF does that doesn't require real estate, a platform, utilities, or a building of some kind — and to get the funds for that 'something,' you have to pass the review of the Facilities Panel..."

Maj. Gen. Clifton D. Wright Jr., the Director of Engineering and Services, HQ USAF, says of the Facilities Panel, "We now have a formal means to address the Air Force's corporate

decision-making structure. It's our job to assure that we provide the best arguments possible to the Facilities Panel, so that they can fully understand and support our programs..."

Definitions

Program Decision Package — This is the basic building block in the program development process. It is a package that describes an independent portion of the Air Force program and generally includes all the resources needed to accomplish that portion of the program. For example, there are PDPs for Peacekeeper, GLCM, ALCM, B-1, and F-16. Each of these PDPs contains the procurement, manpower, O&M, and MILCON resources to accomplish prescribed objectives. Some PDP s are for more general requirements, such as base operating support.

Program Review Committee (PRC) — A committee chaired by a brigadier general (Deputy Director of Programs and Evaluation) and consisting of 18 senior representatives of numerous Air Staff offices. This is the first element in the Board Structure that looks at the total Air Force program and plays a key role in development of the Air Force POM and budget.

Panels — Each PDP is assigned to a panel for review, validation, and setting priorities. The PDP is assigned to that panel responsible for the force programs the PDP supports. For example, the B-1 PDP is assigned to the Strategic Offensive Panel and the F-16 PDP to the Tactical Forces Panel. Any resource requirement for PDPs (including facility resources) is reviewed and evaluated by the panel which monitors the PDP. Additional MILCON resource requirements for the B-1 have to be evaluated by the Strategic Offense Panel. It is that panel which will recommend to the Program Review Committee whether or not the additional B-1 MILCON should be funded. However, since it is MILCON, a resource which the Facilities Panel is responsible for validating, the Facilities Panel will also review the B-1 MILCON and advise the Strategic Panel whether it is valid, executable, correctly priced, and can be designed in time.

Facilities Panel PDPs — Some PDPs are entirely within the purview of the FP:

F170 Civil Engineering Squadrons-Active
F171 RPMA Facility Projects
F260 MILCON Planning and Design
F261 Energy Conservation Investment
F262 Environmental Restoration Program
F560 RPMA/MILCON ANG
F570 RPMA/MILCON USAFR
F786 Hazardous Waste Abatement
F885 AF Family Housing Program

Facilities Panel Operation

The work of the Facilities Panel requires long hours of penetrating

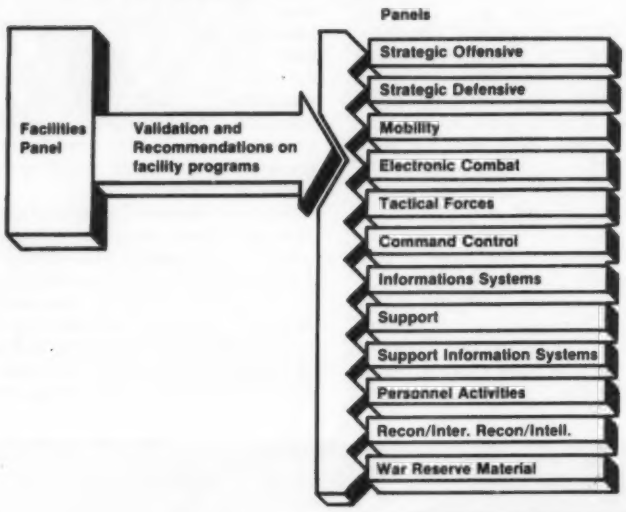
scrutiny of all of the resource requirements in its assigned area of responsibility. Since it was established in August 1984, it has met 30 times for over 90 hours. It plays a key role in really digging into the various programs to ensure proper consideration of all of the factors involved in setting priorities and allocating resources.

The FP gives Air Force leadership a succinct view of the value of various investments and a candid appraisal of the impact of program or project deferrals or deletions. In its deliberations, the FP reviews briefings from the major commands, Air Staff program element monitors (PEMs), and PDP monitors. It works closely with the panels and the major commands to help ensure the best possible information is presented to the Program Review Committee (PRC), Operating Budget Review Committee (OBRC), Force Structure Committee (FSC), Air Staff Board (ASB), and the Air Force Council.

Thus far, almost all of the recommendations of the Facilities Panel and its predecessor, the Facilities Select Group, have been sustained by the Air Force Board Structure and Air Force leadership. This remarkable record in the intensive competition for resources, reflects the valid homework and high quality of FP activities. The FP's strong interface with the PRC, OBRC, and ASB ensures proper consideration of all the aspects of an issue.

The chairman of the Facilities Panel briefs the ASB and the Air Force Council and participates in their deliberations with senior MAJCOM representatives. The FP also keeps the Force Structure Committee advised of any changes impacting force structure adjustments.

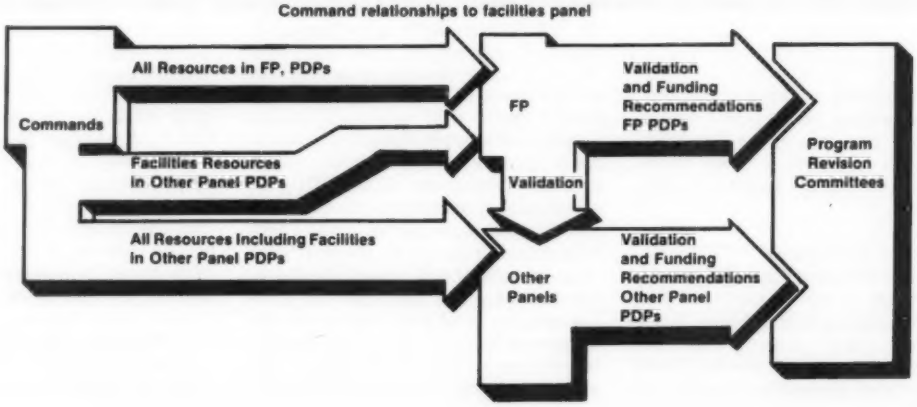
How facilities panel works with other panels



The Department of Defense POM and budget process places extraordinary demands on panels and committees in the Air Force Board Structure to arrive at responsive, proper decision recommendations concerning program requirements, resource allocation, resource shortages, and establishing priorities. Maj. Gen. H. T. Johnson, Chairman of the Air Staff Board, recently said of the panels, "Your deliberations are essential to a balanced war-winning program. Your intense efforts, significant contributions and impact in helping national security are widely recognized and appreciated." The Facilities Panel has earned its place as a key member of the Air Force Board Structure team.★

Arthur B. Markowitz, P.E. is Chief of the Program Development Branch, in the Engineering and Services Programs Division, at HQ USAF. He is a Civil Engineering graduate of Clarkson College of Technology and has 36 years of federal service. He has been awarded 14 superior outstanding awards and was awarded the Air Force Civilian Meritorious award.

Command relationships to facilities panel


All Resources in FP, PDPs
Commands
Facilities Resources in Other Panel PDPs
All Resources Including Facilities in Other Panel PDPs
FP
Validation
Other Panels
Validation and Funding Recommendations FP PDPs
Validation and Funding Recommendations Other Panel PDPs
Program Revision Committees

CESMET tips

R-26, Due-In From Maintenance List (DIFM) — Most DIFM programs within CE are small when compared to other base maintenance acitivities. However, the majority of our CE requirements are bits and pieces to major end items and are often in short supply (i.e., generators, compressors, and barrier parts). Because CE's program is so small, some of our logistics management personnel are not as familiar with repair and return procedures as they should be.

CESMET recommends you ask the following question regarding each potentially repairable item on your R-26: *Can the asset in question be removed and repaired locally, or must it be returned to the depot for rehab?* Most logistics folks we talk to have failed to ask this important question. Remember the item you are holding may be one of the few left in the Air Force inventory. In most cases, repair and return is much faster than requisitioning a new item from supply. You may save thousands of dollars in replacement costs. In any case, it's worth looking into.

CESMET realizes that not all items fit this general category, but many will. The next time you review your DIFM list, we challenge you to question your DIFM monitor.

Logistics Chiefs — Has your logistics function been briefed by base supply on the changes to AFM 67-1 listed below?

- Bench stock;
- Special level validation;
- Equipment requisitions utilizing AF2005 and AF601; and,
- Local purchases of centrally managed items.

If not, CESMET recommends contacting base supply's customers liaison office for assistance in setting up the necessary briefings. The above changes directly affect how you do business within the CE community. Pick up the phone and make the call to CLO!

Residue should be our first source of supply. Remember, it's not how much you have on hand, but *utilization* of the assets. Encourage your shops to review your residue hold area on a weekly basis. Ensure warehouse locations and on-hand quantities are correct. Consolidate as much of your material as possible into one location. Develop and implement some sort of review and documentation process. One suggestion that seems to work well at most bases is a "Residue Review Log Book."

Remember the bottom line is *utilization* of this material. This saves dollars! (HQ AFESC/DET, Lt. Col. Wyatt, AUTOVON 970-6111)

Design Status Management — Evaluating the progress being made on the overall scheduled design program at base level is often a nebulous "guess," or "gut feeling." Most bases brief the design status of each project at the commander's update briefing using several very busy slides. This detailed approach is fine if this is what is really desired by the commander; certain special interest projects may always need to be tracked like this. However, the intent of an update briefing is to provide information in an executive format. Perhaps the BCE and the commander only really need, and want to know, if the technical design section is progressing "on target" to complete the approved facilities board design schedule. In keeping with this executive approach, several bases we have seen recently are now using one slide to depict the overall design status.

Several formats can be used, but the one included here sets the general concept. The beauty of this slide is that it can show several significant things:

- If the design section is cranking out the complete designs on schedule;
- Impacts on the "schedule" are visible (i.e., special project insertions affect the programmed schedule); and,
- Earlier design completions are now desired to meet new air staff policy guidance, and this overall time-scheduling monitoring can help.

Look at how you track overall design progress. If you like this idea, bounce *your approach* up to the BCE and see if it will "fit" his concept and briefing style. (HQ AFESC/DET, Lt. Col. Safrit, AUTOVON 970-6138)

Do BCEs Really Need More General Purpose Vehicles?

by Capt. John Bravo, John Wiegmann, and Andrew Chase

Base Civil Engineers (BCEs) have complained persistently over the years that far too few general purpose vehicles (GPVs) are provided to efficiently employ the BCE workforce. Most mention inadequate GPVs as their major problem.

Overcoming major roadblocks to improved BCE workforce efficiency started in January, 1983, when — stimulated by an Office of the Secretary of Defense (OSD) directive — the Operations and Maintenance directorate of the Air Force Engineering and Services Center (AFESC) hosted the Real Property Maintenance Activity (RPMA) Functional Review Workshop. This evolved into Project IMAGE (Innovative Management Achieves Greater Effectiveness). Workshop membership included civil engineering personnel from the Air Staff to base level, who provided an innovative and creative response to what could have been a mundane and unrewarding effort. One of several workshop outputs was a rank ordering of the top 10 major obstacles to productivity within civil engineering. The lack of adequate GPVs to support the workforce was the unanimous choice for the number one position.

Defining the Problem

Following the workshop, it became obvious that a clear definition of our vehicle problem was needed. To obtain the necessary information, the Air Force Inspector General's Office was requested to perform a Functional Management Inspection (FMI) of civil engineering vehicle management. The results of the FMI indicated:

- High personnel-to-vehicle ratios;
- Alarming vehicle lag time;
- Poor response from the vehicle authorization process; with the
- True productivity-related GPV requirements not known.

In summary, BCE did in fact have a significant and now documented general purpose vehicle problem.

Additional investigation by AFESC disclosed the magnitude of the vehicle problems as compared to the private sector:

• Private sector — one vehicle for one to two workers;

• Air Force — one vehicle for six to seven carpenters; one vehicle for three to four plumbing, electrical, and mechanical craftsmen.

Examples of how BCE crews shared vehicles causing extensive lost productivity were surfaced by the inspection.

By the completion of the FMI a year ago, the RPMA Functional Review had evolved into Project IMAGE and resolving the GPV problem was now clearly identified as the number one problem to be solved.

To assess the scope of the problem, develop an Air Force-wide data base, and impartially evaluate the true GPV requirements for the BCE, it was decided to develop the required information by contract. Sponsored by both the Air Force Civil Engineering and Transportation communities, the 11-month study was awarded to the management consulting firm of Booz, Allen and Hamilton in late September, 1984, with completion scheduled for August, 1985. The statement of work requested statistically valid data to define the extent of the problem. Previous industrial engineering studies conducted by BCE were used to help organizations develop the contract study parameters.

Quantifying the Problem

Booz, Allen and Hamilton used specialists in the transportation and physical distribution fields, and personnel having a comprehensive understanding of the civil engineering environment. With a principal mandate to recommend the optimal ratio of vehicles to personnel for BCE shops, they determined:

• Distribution of workforce time,

• Appropriate GPV typed for each shop,

• The role of taxis and privately-owned vehicles (POVs), and

• The impact of vehicle maintenance policies on BCE.

Extensive Observations of Work Crews Were Key to the Study. The study approach was designed to relate existing vehicle support to the portion of a worker's day that is not available for work because of inadequate transportation. This non-productive time is referred to as Transportation Related Nonproductive Time (TRNT). Data was collected in four ways to develop the answers:

Extensive observations of BCE work crews were made. The half-day observation periods involved moving with randomly selected crews to work sites and periodically recording what each crew member was doing, including:

• Task accomplishment time
  • Direct task accomplishment
  • Indirect task accomplishment
• Direct transportation time
  • In transit to and from the job site
  • In transit to pick-up tools and materials not on site
• Transportation related nonproductive time
  • In transit to pick-up or drop-off another crew
  • Waiting for transportation (e.g., to be picked up by another crew or a taxi)
• Other
  • Absent for part of the day (medical reasons, military exercises)
  • Other waiting or reasons for nonproductive time.

Also recorded was information regarding the amount of time and type of vehicle present, crew location (shop or field), and weather and road conditions. This data was supplemented by questions asked each crew during the observation period.

Questionnaires were completed by personnel in BCE squadrons. The questionnaires solicited information regarding base mission, personnel and vehicle assignments, POV use, and the taxi system.

Questionnaires were completed by personnel in Transporation squadrons. The questionnaires were aimed at the base taxi service and vehicle maintenance.

Interviews were conducted with BCE management. Interviews included superintendents, foremen, managers of non-O&M shops, VCO/VCNCO, and the Base Civil Engineer.

Comparison with the private sector was studied in detail.

Data Was Collected at 14 Bases

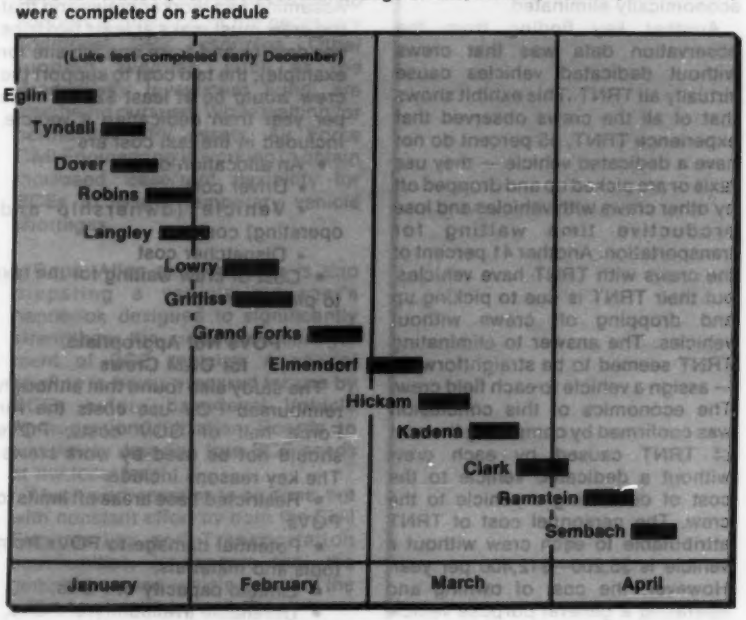
The observation forms, questionnaires, and interview guides developed were tested at Luke AFB in December, 1984. After testing, data collection procedures were refined and we were confident that the ambitious survey schedule of 14 bases could be successfully completed. The bases were selected to reflect a diversity of mission, size, climate, and location. The survey teams received outstanding support from the BCE and Transportation squadrons at each base. The squadrons recognized that vehicle problems existed and fully cooperated to help find answers to the problems.

Conclusions Confirm Need for More Vehicles

The observation data base was the source of workforce time distribution findings. Analyses of the data has identified a significant portion of the

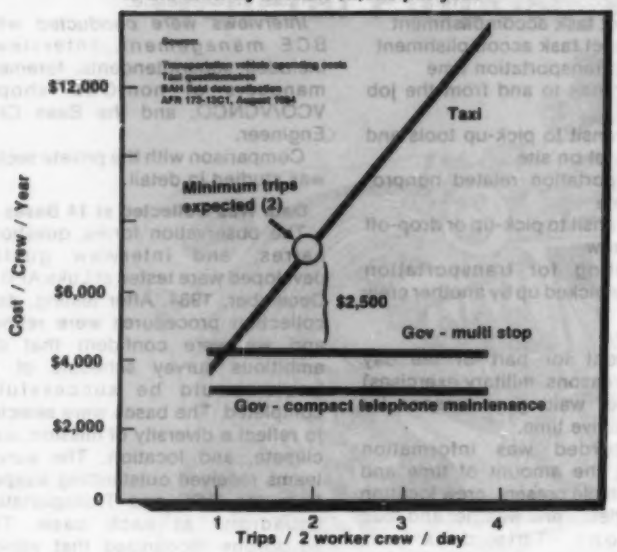
Bases . . .

Visits to 15 bases, selected to reflect a range of size, climate, location, and mission, were completed on schedule



Transportation options . . .

Taxi cost exceeds the cost of dedicating a vehicle to the crew by at least $2,500 per year



average worker's day to be nonproductive due to inadequate transportation resources. From 4.4 percent to 7.4 percent of the day, depending upon the shop, was measured to be TRNT. Reducing TRNT would increase Task Accomplishment and Direct Transportation time so we were particularly interested in the source of TRNT and how it could be economically eliminated.

Another key finding from the observation data was that crews without dedicated vehicles cause virtually all TRNT. This exhibit shows that of all the crews observed that experience TRNT, 55 percent do not have a dedicated vehicle — they use taxis or are picked up and dropped off by other crews with vehicles and lose productive time waiting for transportation. Another 41 percent of the crews with TRNT have vehicles, but their TRNT is due to picking up and dropping off crews without vehicles. The answer to eliminating TRNT seemed to be straightforward — assign a vehicle to each field crew. The economics of this conclusion was confirmed by comparing the cost of TRNT caused by each crew without a dedicated vehicle to the cost of dedicating a vehicle to the crew. The personnel cost of TRNT attributable to each crew without a vehicle is $5,200—$12,400 per year. However, the cost of owning and operating a general purpose vehicle in CE is only $3,500—$4,300 per year. It was clear, and further supported by interviews with private contractors performing similar work, that each crew should have a vehicle.

BCE Taxi System Not Supported

Booz, Allen and Hamilton also concluded that a BCE taxi is not warranted for O&M only, if each work crew has a dedicated vehicle. Assuming two worker crews and that the crew must make *at least* two trips per day (to and from one job site for example), the taxi cost to support the crew would be at least $2,500 more per year than dedicating a vehicle. Included in the taxi cost are:

- An allocation of:
  - Driver cost
  - Vehicle (ownership and operating) cost
  - Dispatcher cost
- Cost of crew waiting for the taxi to pick them up.

POVs Not Appropriate for O&M Crews

The study also found that although reimbursed POV use costs the Air Force half of GOV costs, POVs should not be used by work crews. The key reasons include:

- Restricted base areas off limits to POVs,
- Potential damage to POVs from tools and materials,
- Limited capacity of POVs,
- Unreliable availability of POVs,

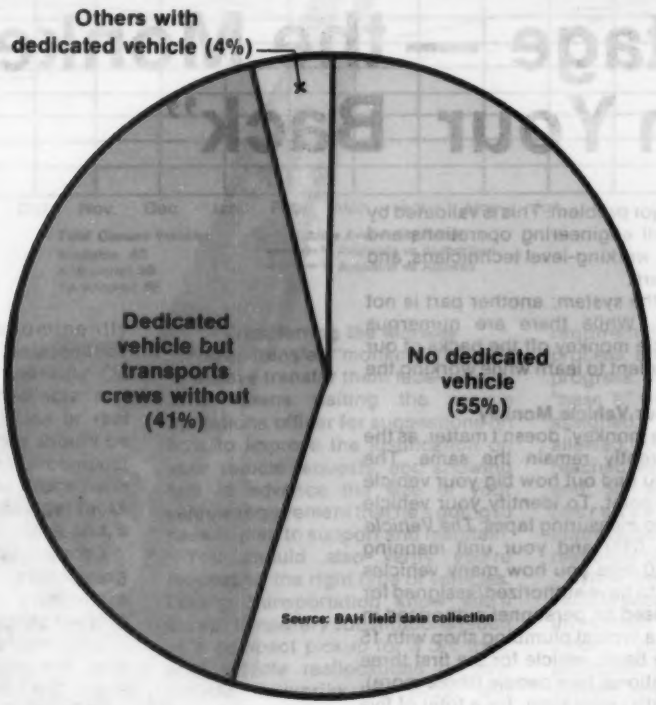
Capt. John E. Brave is a management systems analyst in the management division of the Maintenance Directorate, HQ AFESC, Tyndall AFB, Fla. He has previously served as chief of operations and maintenance, resources and requirements, industrial engineering, contract management, and programs at bases in ATC, TAC, USAFE, and PACAF. He holds a bachelor's degree in Industrial Engineering and a master's of science in Information and Computer Science, from Georgia Tech.

John D. Wiegmann, principal, Booz, Allen and Hamilton, is project manager on the General Purpose Vehicle Requirements Contract. He has 18 years experience focusing on engineering systems analysis, productivity studies, and maintenance and fleet operations management in the defense and transportation industries. He holds a bachelor's degree in Mechanical Engineering, an MBA from Boston University, and has received industrial engineering training from Massachusetts Institute of Technology.

Andrew S. Chase, associate, Booz, Allen and Hamilton, is assistant project manager on the General Purpose Vehicle Requirements Contract. He has 7 years experience, encompassing strategic planning, market analysis, financial analysis, and engineering. He holds a bachelor's degree in Civil Engineering and a master's in Structures, from Rensselaer Polytechnic Institute, N.Y. He received an MBA from the Wharton School, University of Pennsylvania.

Workforce time . . .

Crews without dedicated vehicles cause virtually all TRNT


Others with dedicated vehicle (4%)
Dedicated vehicle but transports crews without (41%)
No dedicated vehicle (55%)
Source: BAH field data collection
Crews with TRNT

• Reduced identification and control of crews using POVs.

Data indicates that work crews cannot be supported economically by the BCE taxis. Further, the BCE taxi service would be an unnecessary duplication if all BCE work crews had GPVs.

Increased Vehicle Allowances Recommended for CE

Recommendations are being developed for new vehicle-to-personnel ratios that would substantially increase the number of CE general purpose vehicles. The recommendations also identify appropriate vehicle types and modifications to those vehicles such as racks, lift gates, pintel hooks, locking tool compartments, additional seats, etc.

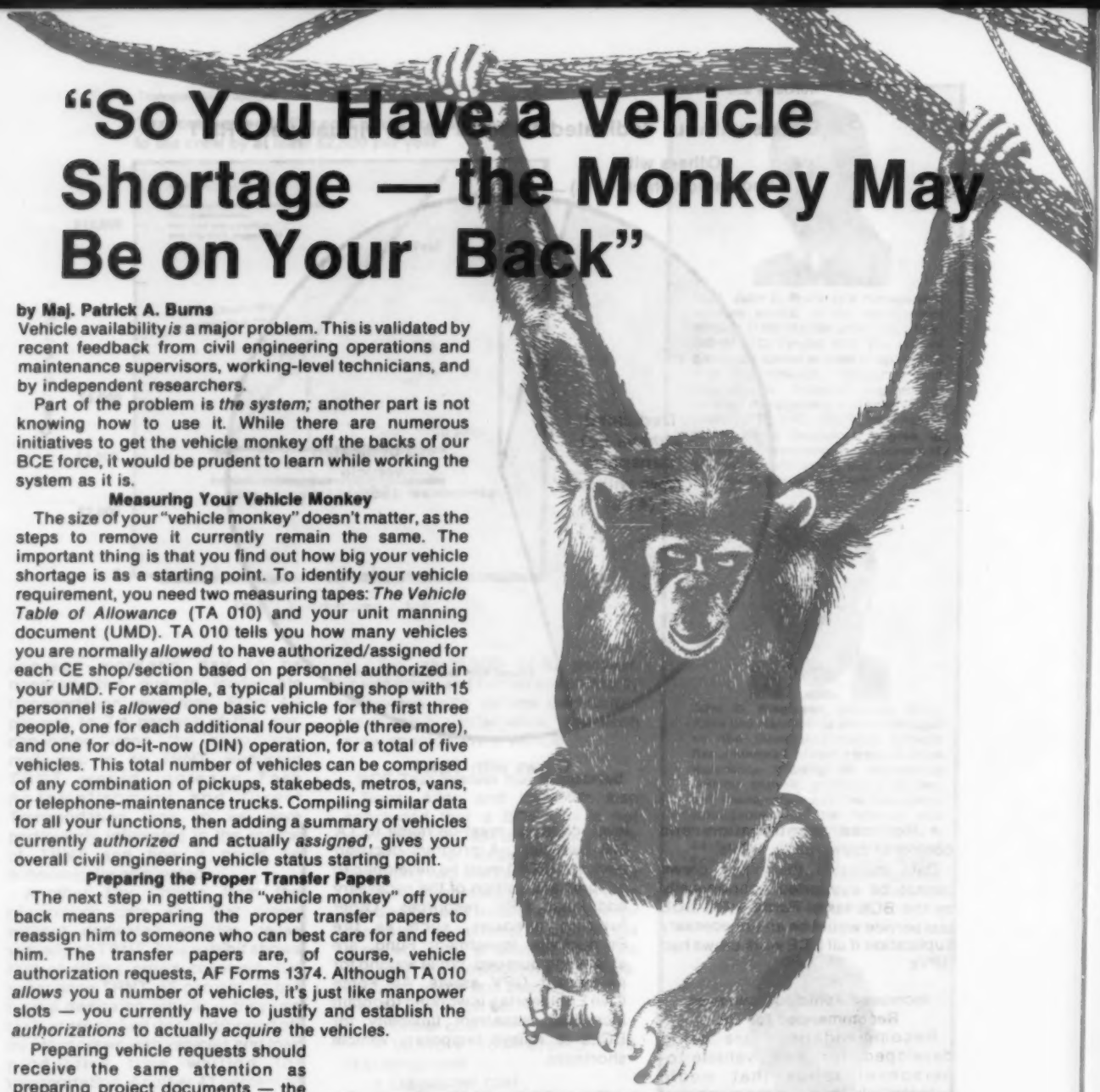
Solution Implementation

Implementing contract results is a complex process, expected to take several years; it requires the coordinated efforts of both Air Force Civil Engineering and Transportation. At Air Staff, MAJCOM, and base level, changes must be made to TA 010 (vehicles). A program decision package (PDP) must be developed to support acquisition of the necessary additional GPV resources. Other funding avenues, such as the Productivity Investment Fund, are also being pursued. While waiting for permanent GPV assets, Air Force Civil Engineering is working to obtain increased lease/rent flexibility for BCEs to relieve temporary vehicle shortages.

Booz, Allen and Hamilton is also preparing a vehicle manager's handbook designed to significantly strengthen the unit-level management of BCE vehicles. A special briefing is being prepared for use by BCEs before base-level Vehicle Authorization/Utilization Boards to accurately describe true BCE needs at the local level.

Much work remains to be done, but with constant effort by both the Civil Engineering and Transportation communities, it appears that the general purpose vehicle needs of the BCE may finally be met. ★

"So You Have a Vehicle Shortage — the Monkey May Be on Your Back"



by Maj. Patrick A. Burns

Vehicle availability *is* a major problem. This is validated by recent feedback from civil engineering operations and maintenance supervisors, working-level technicians, and by independent researchers.

Part of the problem is *the system;* another part is not knowing how to use it. While there are numerous initiatives to get the vehicle monkey off the backs of our BCE force, it would be prudent to learn while working the system as it is.

Measuring Your Vehicle Monkey

The size of your "vehicle monkey" doesn't matter, as the steps to remove it currently remain the same. The important thing is that you find out how big your vehicle shortage is as a starting point. To identify your vehicle requirement, you need two measuring tapes: *The Vehicle Table of Allowance* (TA 010) and your unit manning document (UMD). TA 010 tells you how many vehicles you are normally *allowed* to have authorized/assigned for each CE shop/section based on personnel authorized in your UMD. For example, a typical plumbing shop with 15 personnel is *allowed* one basic vehicle for the first three people, one for each additional four people (three more), and one for do-it-now (DIN) operation, for a total of five vehicles. This total number of vehicles can be comprised of any combination of pickups, stakebeds, metros, vans, or telephone-maintenance trucks. Compiling similar data for all your functions, then adding a summary of vehicles currently *authorized* and actually *assigned*, gives your overall civil engineering vehicle status starting point.

Preparing the Proper Transfer Papers

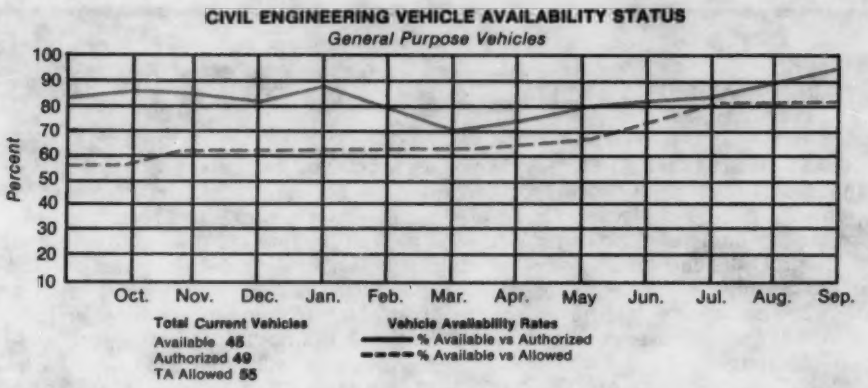
The next step in getting the "vehicle monkey" off your back means preparing the proper transfer papers to reassign him to someone who can best care for and feed him. The transfer papers are, of course, vehicle authorization requests, AF Forms 1374. Although TA 010 *allows* you a number of vehicles, it's just like manpower slots — you currently have to justify and establish the *authorizations* to actually *acquire* the vehicles.

Preparing vehicle requests should receive the same attention as preparing project documents — the requests need to be credible and effective in articulating the true requirement. Too often we have valid requirements, but don't express that need effectively in words for reviewing/approval authorities. (Remember how a weak work request/project document has trouble in your facilities utilization board? The process used by the vehicle authorization and utilization board is just as rigorous.)

An important element of the vehicle request is the type of vehicle you're requesting. You'll find that a few stakebeds, metros, and vans,

Synopsis of CE Ops vehicles allowed in TA 010

Vehicles Allowed/Reason	Applicable Shops
1 Vehicle for first 3 people	All BCE Shops
1 Vehicle for each added 3 people ...	468/9, 493
1 Vehicle for each added 4 people ...	432,453,461,463,471,480
1 Vehicle for each added 8 people ...	451,451,454,455,462,491
1 Vehicle for DIN operation	451,453,454,461,463,471
1 Vehicle for SMART	457
1 Vehicle for cathodic protection	471
1 Vehicle for airfield lighting	472
1 Vehicle for aircraft arresting sys ...	480



combined with predominently compact telephone maintenance trucks, will provide a versatile CE vehicle fleet that is available and responsive to any exercise or real world need. (The benefits should be apparent for a tailored, compact telephone maintenance truck with secure parts and tool storage; racks for ladders, lumber, and pipes; and, a pintel hook for CE unique needs.)

Your daily efforts in maintaining your vehicle fleet are even more important. The VAUB should see that you not only have the largest vehicle fleet on base, but also the best maintained, with solid and well-justified requirements. Think of how we rate our CE customers who take good care of their facilities through self-help, versus those who have damage or facility abuse.

Monitoring Your Monkey's Health

So your vehicle requests are approved — the next step is making sure your "vehicle monkey" is healthy and happy with someone else.

Tracking your Vehicle Availability Rate at BCE update briefings is a good way of monitoring your progress in improving your vehicle status. *The percentage of vehicles in operation vs. TA allowed is the overall indicator of your true shortage.* The difference between "percent in operation vs. authorized" and "percent in operation vs. TA allowed" is the measure of your efforts to identify the requirement to transportation and establish vehicle authorizations. The percent in operation vs. assigned measures transporation's success in acquiring, assigning, and maintaining your vehicles.

Also, update your vehicle status sheet whenever it changes. It will help the visibility of your vehicle status and serve as a superb reference for the BCE, chief of Operations, and key supervisors.

Transferring the Monkey

Never transfer "monkeys" by mail — always transfer them face-to-face. This means visiting the vehicle operations officer for suggestions on how to improve the justification on your vehicle requests, and showing him in advance the size of your vehicle requirement that he's going to have to plan to support and maintain.

You should also verify you're requesting the right type of vehicles. Letting transportation know you'll accept temporary substitutions (such as a compact pickup for a 3/4 ton), until vehicle reallocations or new vehicle deliveries catch-up, will provide flexibility to help you both.

And most importantly, the BCE and chief of operations must attend the VAUB to actively participate in the overall base vehicle management process.

Care and Feeding of Your Monkey

The corporate body that decides the "care and feeding of your monkey" is the VAUB, which meets at least quarterly. Its main duties are reviewing and deciding on vehicle authorization requests, reviewing vehicle assignments, approving vehicle management and maintenance priority lists, and reviewing vehicle inspections and abuse data.

Again, like at a FUB, the impression you make as a requestor (good or bad) depends on being thoroughly prepared in all areas. Pay close attention to where your vehicles fall in the management/maintenance priority list, as it has long-term impact on when your vehicles are pulled to support higher priority shortfalls and vice-versa.

Your daily efforts in maintaining your vehicle fleet are even more important. The "bottom-line" is, if we have a civil engineering vehicle shortage, the "monkey is on our back" to do something about it. Identify your shortage, transfer the requirement through the VAUB process, and track it properly to keep progress visible. Does it work? At "base X" we started with 31 vehicles assigned, 35 authorized, and 52 allowed; over a 2-year period we reached 46 assigned, 51 authorized, and 55 allowed — a significant increase that reflected in improvements in productivity and response times!

While there is the promise of better vehicle support in the future, with less investment of your valuable time and effort, you shouldn't wait for promised help. Start working the system now. Vehicles are still live items in the budget. And, when budgets get squeezed, you never know what's going to fall out.★

Maj. Pat Burns is currently assigned to the Plans Division, Directorate of Engineering and Services, HQ USAF, at the Pentagon. He earned a B.S. in Mechanical Engineering from the University of Wyoming, and a M.S. in Systems Management from the University of Southern California. Since commissioned through the Airman Education and Commissioning Program, he has served at Plattsburgh AFB, N.Y., HQ SAC Offutt AFB, Neb., Education-With-Industry at Dallas/Ft. Worth Airport, Tex., and most recently at Dyess AFB, Tex., as chief of Operations. He is a member of the Society of American Military Engineers, American Society of Heating, Refrigeration, and Air Conditioning Engineers, and the American Institute of Plant Engineers.

tecnotes

HYPARS BLAST RESISTANT SHELTERS are a new concept in protective construction, useful in resisting the effects of conventional weapons. Hypars (hyperbolic paraboloid) panels are shells with double opposing, curved surfaces. They can be prefabricated, or constructed on-site. Potential applications include command and control facilities, aircraft shelters, munitions storage, and equipment protection. Several full-scale tests conducted in April at Tyndall AFB demonstrated that the structures have excellent ductility and energy-absorbing capabilities. Advantages include: rapid deployment, modular design, elimination of internal destructive spall, ability to function as an economical, permanent multi-use space, and an overall economic advantage. A final technical report on exploratory development of Hypars will be disseminated soon. Development will continue through FY 86 and FY 87. (HQ AFESC/RDCS, Lt. Hilferty, AUTOVON 970-6278)

ENERGY PROJECT LIFE-CYCLE (LCC) ANALYSIS — A new energy subsystem on the Engineering and Services Programming, Design, and Construction (PDC) computer system allows MAJCOMs and AFRCEs to complete both ECIP and preliminary solar assessments in just a few minutes. By entering minimal raw data — all calculations (savings-to-investment ratios, discounted paybacks, energy-to-cost ratios, etc.) are accomplished by the computer. (HQ AFESC/DEB, Capt. Jager, AUTOVON 970-6454/6466)

HAZARDOUS SLUDGE REDUCTION PILOT PLANT/DEMONSTRATION — A pilot plant operation has successfully achieved hazardous sludge volume reduction using a new chemical treatment technology, called "ferrous and sulfide (Fe&S)," for wastewaters containing heavy metals. It was developed in-house at the Environics Division of the Engineering and Services Laboratory. Due to the successful pilot scale testing, the Tinker AFB, Okla., Industrial Wastewater Treatment Plant (IWTP) was altered to run on the new Fe&S technology and permanent conversion is slated for early FY 86. During the 10-day demonstration, the IWTP ran at maximum capacity with no violations of discharge permits, producing a 70 percent reduction in sludge generated by metals precipitation, and an 80 percent reduction in sludge generated from water softening. (HQ AFESC/RDVW, Lt. Aldrich, AUTOVON 970-2942)

RRR FOR STRATEGIC AIRLIFT — As a follow-on to the Air Base Survivability Exercise (SALTY DEMO) at Spandahlem AB, Germany, in May, a new test is planned for this month at RAF Wethersfield, United Kingdom, which will demonstrate the performance of current RRR methods under heavy aircraft traffic, involving taxi, takeoff, and landing operations of both a C-141B and a C-5 over repairs, using both precast slab and fiberglass mat. The test involves resources from HQ AFESC, HQ USAFE, 819th RED HORSE, MAC and AFWAL. (HQ AFESC/RDCR, Capt. Lewis, AUTOVON 970-6317)

PAVEMENT TECHNOLOGY BRANCH (RDCP) — Expanded research and development activities in FY 86 include:

- Effects of high pressure aircraft tires on rutting in asphalt concrete surfaces;
- Factors affecting long-term performance of recycled portland cement concrete and asphaltic concrete;
- Searching for alternatives to expensive and limited existing binders for asphaltic concretes;
- Methods to use marginal aggregates in areas experiencing severe shortages of acceptable aggregate;
- Using various nondestructive testing and evaluation equipment and methods to provide on-site determination of structural capacity; and,
- Acceptable alternative design schemes for alternate launch and recovery surfaces to achieve least cost for greatest survivability.

Inputs for these or other airfield pavement research projects are being accepted. (HQ AFESC/RDCP, Maj. Costigan, AUTOVON 970-6281)

ANTIPENETRATION DEVICES TESTED AGAINST CONVENTIONAL WEAPONS — Two new technical reports are being published and should be available soon: ESL-TR-84-48, "Gun Penetration Tests into Rock/Rubble Encased with Concrete," explores the target/weapon behavior for 8-inch projectile firings into rock/concrete burster slabs and rock/concrete composite rubble; and, ESL-TR-84-49, "Burster Slab Penetration Test," summarizes the test results and verifies the protection capability of reinforced concrete burster slab protective systems against conventional weapons. (HQ AFESC/RDCS, Mr. Buchholtz, AUTOVON 970-6279)

BLUEPRINT FOR CAREER DEVELOPMENT

by Capt. Deborah L. Clark

How do those at the top get to the top?...luck?...or skill?

The airmen assignment team at Headquarters, Air Force Military Personnel Center, sees many winners, and it is obvious that most of our senior NCOs took a hard look at what was possible, and then worked diligently to achieve their goals. Perserverance, determination, and dedication, coupled with skill and a little luck, helped today's winners get to the top.

There is no guaranteed set of "keys to success." One obvious key is scoring well on promotion tests, but the assignment team has some additional guidelines which can be followed to significantly enhance your potential. Some ideas for you to consider are:

• **The most important job is the one you have right now.** It trains you for greater responsibilities, serves as the basis for your current APR, and influences the programs and assignments your supervisor feels you deserve. Your attitude and competence in today's job can make your future look bright.

• **Look for upwardly mobile positions, at home as well as somewhere else.** Just about the time your competence and skills overtake your job requirements, you may feel "job stagnation." Look around! When you find a job which enriches your career, and which you feel you can do, raise your hand.

• **Learn the assignment system.** That's not "gaming the system," but simply taking the actions the Air Force expects of you. You may still be selected for an undesirable assignment, but your desires will have at least been considered.

• **Plan your "remotes," don't just let them happen to you.** While we prefer volunteers for short tours, unfortunately, nonvolunteers are regularly selected. Because "remotes" are inevitable, it is pointless and frustrating to try avoiding them. The smart way is figuring at which point a short tour would be easiest for you and your family. If you haven't yet started a family, maybe now is the best time. If it's important being at home for the last year of high school for one of the kids, why not get the short tour out of the way early?

• **Make the most of your remote.** It is the best time to really dig into your job and master it. At the same time, you can get correspondence courses behind you. Many remotes have unique educational opportunities as enhancements. Most of all, the strong camaraderie inherent in such assignments will make you a better team player in any organization.

• **It sometimes works that "remotes" can be used as levers to get preferred assignments.** If a long tour is your goal, your chances of being selected are greatly increased if you are coming off a remote. Once selected for a remote, you can begin working on your follow-on assignment.

• **Open your eyes to the many assignment opportunities which may not be obvious.** People in civil engineering and services are frequently selected by the technical training centers as instructors or to develop course materials. At the major commands, Headquarters, Air Force Engineering and Services Center, and HQ AFMPC, highly qualified people are essential. Assignments include the Civil Engineering and Services Management Evaluation Teams, assignment teams, and the people who are responsible for E&S technical policy and control.

• **The best "whole person" candidates get the best jobs.** Community activities, off-duty education, and PME are valuable additions to outstanding APRs as qualifiers. Working with the local population helps the Air Force maintain good relationships with the local community; coaching an intramural team cultivates patience, teaches leadership, and enhances management skills; off-duty education improves your communication skills, your appreciation of new ideas, and teaches problem solving.

• **Be visible.** Be willing to demonstrate your unique skills, talent, and leadership in ways which give your supervisors an opportunity to know your capabilities inside and outside the office environment.

• **Be a basewide team player.** Be willing to work special projects in support of both official and non-official projects which help your unit or base. You may be impressing someone you won't work for for another couple of years, but that favorable impression may help you become the preferred choice coming off a remote, or on a request for reassignment.

• **Learn from leaders.** Your supervisor, the unit first sergeant or career advisor, and the people who run the CBPO, should be on your "must know" list. Tap their knowledge. Avoid reinventing the wheel. Get to know them, and find ways to better plan your future.

• **Walk with winners.** There are outstanding examples of people who learned the system and are better NCOs today because of it. Don't be afraid to ask, "Chief, how did you do it?" Then — *listen.*

You can be a future NCO leader by making your goals now. The Blueprint Team is here to help you help yourself. Good luck!

Capt. Deborah L. Clark is the chief, Logistics Support Assignments Section at HQ AFMPC, which is responsible for Air Force Engineering and Services' enlisted assignments. She holds a bachelor of arts degree in Political Science from the University of Idaho and is pursuing a master of arts in Management from Webster University. She is a graduate of Squadron Officers School. Before her present assignment, she was the chief, Personnel Utilization at Mountain Home AFB, Idaho, and chief, Quality Force at Spangdahlem AB, Germany.

Col. Gilbert: New AFESC Commander

Col. Gilbert

Maj. Gen. Clifton D. Wright, Jr., the Director, Engineering and Services, HQ U.S. Air Force, has completed the leadership team at Headquarters, Air Force Engineering and Services Center, Tyndall AFB, Fla., and has outlined other key assignments.

- Col. Robert G. (Bob) Gilbert is the new commander, HQ AFESC, succeeding Col. Roy G. Kennington, who returns to his former position of vice commander.
- Col. Jerry A. Smith, the previous commander, is now deputy chief of staff, Engineering and Services, Alaskan Air command;
- Col. Ralph H. Hodge, the former AAC/DE, is the new Air Force Regional Civil Engineer, Western Region, San Francisco. He succeeds Col. John C. Price, who retired.
- Col. Warren C. Dickerson is the new Readiness director, HQ AFESC/DEO. He succeeds Lt. Col. Clifton T. (Travis) Windham, who retired July 1.
- Col. James Bannwart is the new chief, Housing and Services Division, HQ USAF/LEEH, succeeding Col. Michael A. McAuliffe.
- Colonel McAuliffe is the new chief, Programs Division, HQ USAF/LEEP, succeeding Col. Frank A. DeMartino.
- Colonel DeMartino is the new assistant DCS/DE, Air Training Command, Randolph AFB, Tex., succeeding Col. George A. (Tee) Romero.
- Colonel Romero is the DCS/DE, HQ Air Force Reserve, Robins AFB, Ga., succeeding Col. Matthew M. Cafiso, who retired last November.
- Col. Ray D. Schwartz succeeded Col. Harry E. Halac as the DCS/DE, Strategic Air Command. Colonel Halac retired April 1.
- Col. Allan J. Sailer, former BCE, Offutt AFB, Neb., is the new deputy SAC/DE.

The growing importance of AFESC was noted by General Wright when he named the new commander.

"The Center is the single technical policy and process focal point in the Air Force guiding the activities of our nearly 114,000-member total force, worldwide, in both peacetime and wartime conditions," he said. "We are fortunate to have leaders at the Center who were a part of its formation, and who are rooted in field-level experience."

Colonel Gilbert returns to the Center for the second time. He came from an assignment as commander, 4392nd Civil Engineering Sq., Vandenberg AFB, Calif. During his previous Center tour, he was chief of staff and the Director, Resources Management, at the time the Center was being formed as a Separate Operating Agency. Responsibilities were being assimilated at Tyndall AFB from Kelly AFB, Tex., the Washington, D.C., area, Philadelphia, Pa., and Kirtland AFB, N.M.

Col. Roy G. Kennington, vice commander, was the Center's first chief of the Housing Division, later the chief of Food Management division, and finally the deputy director, Housing and Services during the Center's formative period.

"I feel that the continuity of involvement with the Center is important," said General Wright. "I look to the Center leadership as the operational right arm of the Directorate in Washington."

Colonel Gilbert's Background

During a tour in Washington, Colonel Gilbert was chief of family housing design, and later served as the Director's executive officer. Colonel Gilbert's other assignments include project architect, Sheppard AFB, Tex.; RED HORSE, Tan Son Nhut AB, Vietnam; USAFE Inspector General's team, Lindsey AS, Germany; director of Civil Engineering, HQ 16th Air Force, Torrejon AB, Spain; and director, Operations and Maintenance, DCS/DE, HQ USAFE, Ramstein AB, Germany.

He was commissioned through Officer Training School after graduating from the University of Washington, from which he holds bachelor's and master's degrees in Architecture. He graduated in residence from the Air Command and Staff College, Maxwell AFB, Ala., and the Industrial College of the Armed forces, Ft. Lesley J. McNair, Washington, D.C.

His decorations include the Bronze Star, the Meritorious Service Medal with three oak leaf clusters, and the Air Force Commendation Medal. He is married to the former Meredyth Walsh, a native of Seattle, Wash. They have two children, Ken and Kristi.

Department of the Air Force
AF Engineering & Services Quarterly
HQ AFESC
Tyndall AFB, Florida 32403

POSTAGE AND FEES PAID
THIRD CLASS BULK RATE
USAF PERMIT NO. G-1

University Microfilms Intl.
300 N. Zeeb Road
Ann Arbor MI 48106

U.S. Government Printing Office, 1985-154-122-3